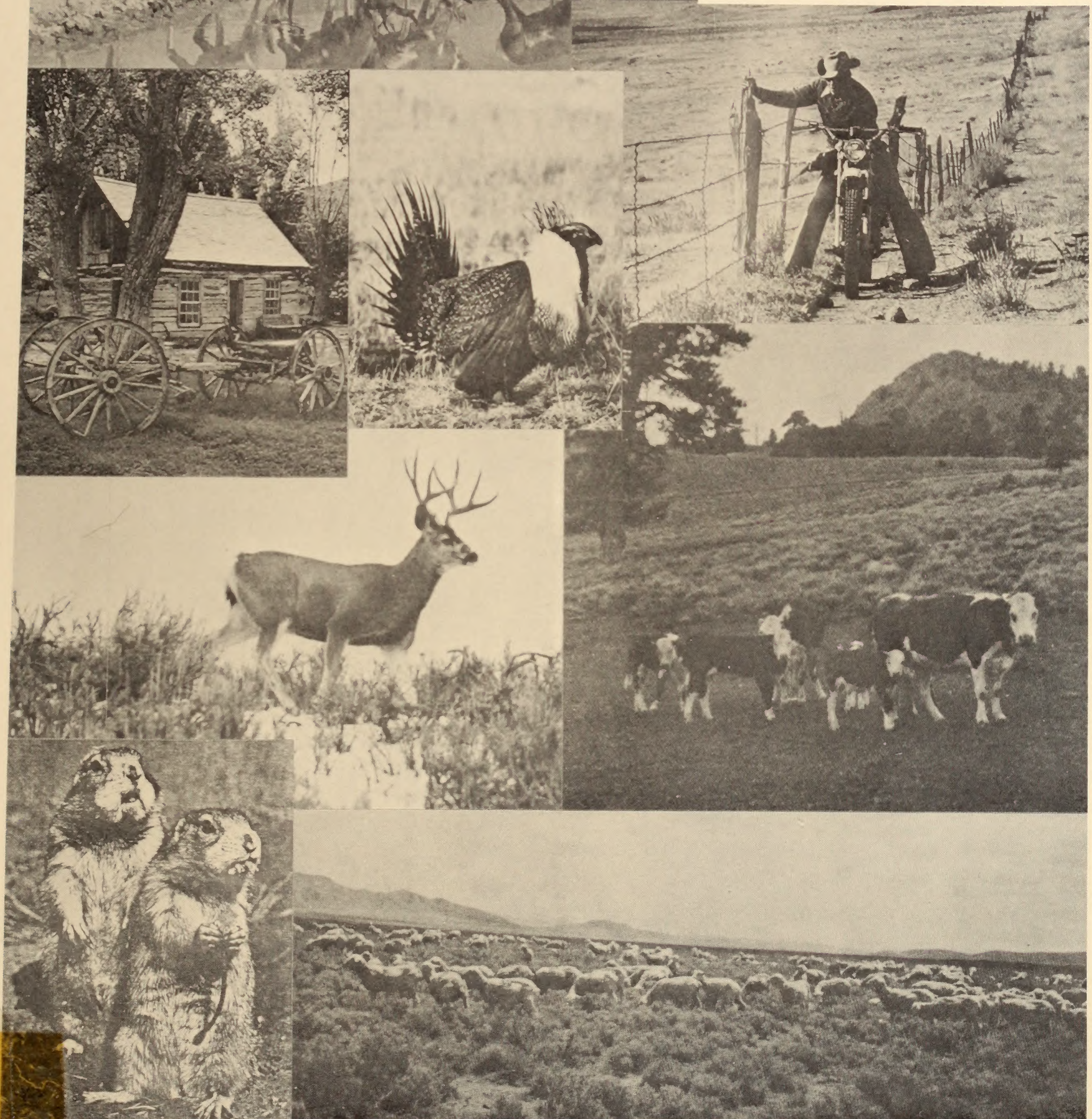
DRAFT

MOUNTAIN VALLEY GRAZING MANAGEMENT

ENVIRONMENTAL IMPACT STATEMENT

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT



DEPARTMENT OF THE INTERIOR

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MOUNTAIN VALLEY

GRAZING MANAGEMENT

Prepared by

BUREAU OF LAND MANAGEMENT
DEPARTMENT OF THE INTERIOR

Gary J. Wicks

Utah State Director, Bureau of Land Management

MOUNTAIN VALLEY PROPOSED GRAZING MANAGEMENT

Draft (X) Final ( ) Environmental Impact Statement

Department of the Interior, Bureau of Land Managment

1. <u>Type of Action</u>: Administrative (X) Legislative ( )

2. <u>Abstract</u>: The Bureau of Land Management (BLM), as part of their planning process for the Mountain Valley Planning Area and in response to a suit filed in 1973, has prepared this Environmental Impact Statement (EIS). BLM proposes to implement livestock management on 90 allotments in the Sevier River Resource Area of the BLM Richfield District. The planning area contains 499,972 acres of public lands located in Piute, Sevier, Sanpete, and Wayne Counties in south-central Utah. Development of management alternatives (listed below) involved identifying and analyzing conflicts between resource values while preparing the Management Framework Plan. This EIS analyzes the environmental, cultural, and socioeconomic consequences of the management changes and the improvements of the associated range developments. Vegetation production and ground cover would increase, overall watershed conditions, wildlife habitat, and surface water quality would improve, soil erosion would decrease, and regional income would increase in all alternatives except Alternative E, Continue Present Management. Proposed range developments would somewhat degrade the area's scenery. Continued soil erosion, cattle trampling, and some range developments would slightly disturb cultural resources. Riparian areas would not improve in all alternatives. Ranch income and capital values would decrease in some alternatives.

3. <u>Alternatives Analyzed</u>:

A. Optimize Non-Livestock Resources
B. Optimize Livestock Grazing
C. Rangeland Management Recommendation
D. Eliminate Livestock Grazing
E. Continuation of Present Management
F. Adjust Spring Livestock Use

4. <u>Comments have been requested from the following</u>:

See attachment.

5. <u>For further information contact</u>:

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Richfield, Utah 84701
Telephone: (801) 896-8221

6. <u>Date draft statement made available to EPA and the public</u>: MAY 2 2 1980

Comments on the draft must be received by:

JUL 2 1 1980

ATTACHMENT

Comments have been requested from the following agencies, interest groups, and individuals:

1. <u>Federal Agencies</u>

Department of Agriculture
- Agricultural Stabilization and Conservation Service
- Forest Service
- Soil Conservation Service

Department of the Interior
- Geological Survey
- Fish and Wildlife Service
- Bureau of Indian Affairs
- Bureau of Mines
- Department of Water and Power Resources
- Heritage Conservation and Recreation Service
- National Park Service
- Capitol Reef National Park
- Office of the Solicitor
- Department of Commerce
- Advisory Council on Historic Preservation
- Environmental Protection Agency

2. <u>State Agencies and Organizations</u>

State of Utah
- Clearing House (A-95)
- Department of Agriculture
- Department of Natural Resources
- Division of Wildlife Resources
- Division of Lands

University of Utah
Utah State University

3. <u>Local Agencies</u>

Six County Commissioners Organization
Sanpete, Sevier and Piute County Commissions

4. <u>Nongovernment Organizations</u>

Ada County Fish and Game League
Audubon Society
Brigham Young University
Common Cause
Council on Utah Resources
Defenders of the Outdoor Heritage
Defenders of Wildlife
Enchanted Wilderness Association
Environmental Action
Environmental Awareness
Environmental Defense Fund
Friends of the Earth
Good Earth

ATTACHMENT (concluded)

Institute of Ecology
Izaak Walton League
League of Women Voters
National Council of Public Land Users
National Parks and Recreation Association
National Stock Grower's Association
National Wildlife Federation
Natural Resources Defense Council
Nature Conservancy
Nevada Outdoor Recreation Association
Oregon Environmental Council
Pacific Legal Foundation
Pro-Utah, Inc.
Public Lands Council
Rocky Mountain Center on Environment
Rocky Mountain Sportsmen Association
Save Our Canyons Committee
Sierra Club
Society for Range Management
The Wilderness Society
The Wildlife Society
Utah Cattlemen's Association
Utah Council, Trout Unlimited
Utah Environment Center
Utah Farm Bureau
Utah Nature Study Society
Utah Sportsmen Association
Utah Archaeological Society
Utah Wildlife and Outdoor Recreation Federation
Utah Wool Grower's Association
Women's Conservation Council of Utah

5. <u>Congressional</u>

Utah Delegation

6. <u>Interested Individuals</u>

Copies of this draft environmental statement will be available for public inspection at the BLM offices listed below:

Washington Office of Public Affairs
18th and C Street, N.W.
Washington, D.C. 20240
Phone (202) 343-4151

Utah State Office
University Club Building
136 East South Temple
Salt Lake City, Utah 84111
Phone (801) 524-4227

Richfield District Office
150 East 900 North
Richfield, Utah 84701
Phone (801) 896-8221

SUMMARY

This statement analyzes the effects of six alternative range management programs for the Mountain Valley Planning Area developed by the Bureau of Land Management (BLM). Based on this analysis and additional public involvement, a range management program will be selected by BLM for the 499,972 acres of public lands in the planning area.

The planning area is located in south-central Utah and includes substantial areas in Sanpete, Sevier, and Piute Counties and small areas in Garfield, Wayne, Millard, and Juab Counties. It is approximately 114 miles long and has a total area of 689,175 acres. Seventy-two percent (499,972 acres) of this area is BLM administered public lands; the remaining lands are State (16 percent, 106,714 acres) and private (12 percent, 82,489 acres).

The need for positive action has been recognized by BLM. Resource inventories show that basic soils, vegetation, and wildlife resources are in poor to good condition, with some valuable aspects deteriorating. One of the causes is the present level and methods of livestock grazing on public lands.

BLM has identified, through its multiple use planning process, several alternatives that could overcome these problems and they are, to varying degrees, compatible with the needs and goals of area residents. Alternatives C and F are environmentally preferred; however, action from each of the alternatives could be selected by management following the completion of the EIS process.

As a part of the planning process, continuing public involvement (scoping) has identified significant issues which are considered in this statement and form the basis for the proposed alternatives. This public involvement serves to sharpen the focus of this statement, influencing not only the development of alternatives, but also the level of detail and depth of analysis of the effects of implementing any one of the six alternatives.

Most issues raised during the scoping process centered on livestock grazing and socioeconomic concerns such as level of grazing, season of use, and the degree of management/control required to implement improved range management in the planning area. Other issues of concern were increases in wildlife, habitat condition, recreation, and visual resources as they relate to livestock grazing.

This statement analyzes the environmental consequences of each of the six alternatives on the affected environment.

Alternatives

The six alternatives vary in level of allocation, range developments, allotment combinations, and grazing treatments proposed. Management objectives also vary from maintenance and protection to improvement and intensifying uses of existing resources. The alternatives are given below, together with a brief description of each.

A. Optimize Non-Livestock Resources

All resources other than livestock grazing would be given first priority use of vegetation (i.e., watershed, animal life, recreation, visual resources, etc.). The projected vegetation needs of other resources would be satisfied before any vegetation would be allocated to livestock.

B. Optimize Livestock Grazing

This alternative allows priority of vegetation allocation to livestock up to the amount available, according to the current range survey. Vegetation that could not be made available to livestock would be allocated to other uses.

C. Rangeland Management Recommendation

This alternative was developed using an interdisciplinary approach. The needs of each resource were balanced with the needs of a competing resource. Livestock and wildlife would be given equal consideration, with priority given to one or the other on an allotment-by-allotment basis.

D. Eliminate Livestock Grazing

This alternative excludes livestock grazing on public lands. Private landowners would be required to control their animals and to allow no trespass on public lands. All usable vegetation would be allocated to deer, antelope, and elk.

E. Continuation of Present Management

Under this alternative, present management practices would continue. Existing grazing permits would continue to set a period of grazing, kinds of livestock allowed to graze, and the number allowed to graze.

F. Adjust Spring Livestock Use

The purpose of this alternative is to manage rangelands based on improvement in range condition and trend. This alternative requires adjustment of spring use by livestock and/or wildlife where range condition is poor or fair and trend is declining or static.

Summary table 1 and Summary figure 1 give a comparative analysis of proposed range developments and vegetation allocations (in AUMs) to big game and livestock for the six alternatives.

Affected Environment

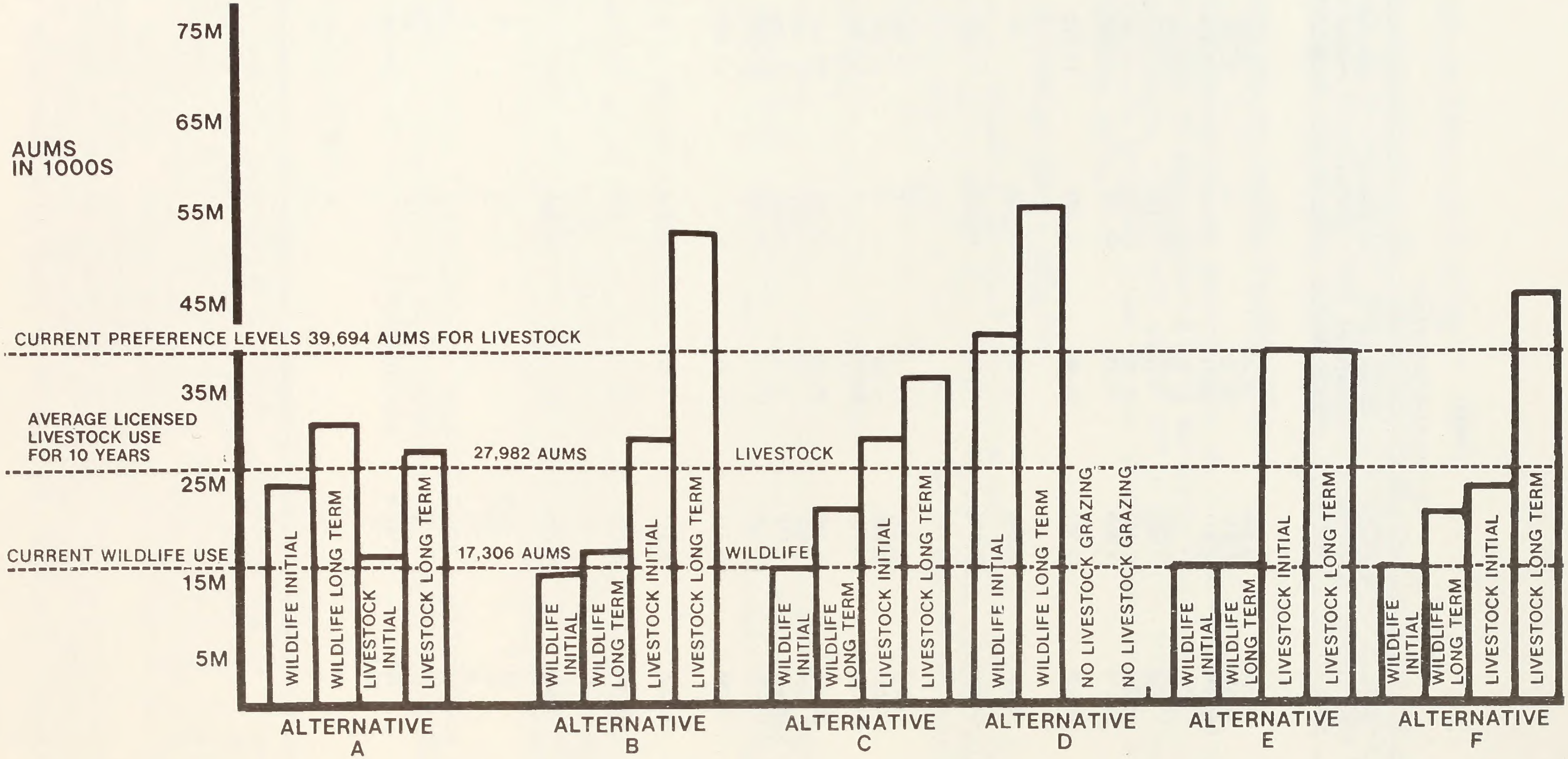
The area is dominated by pinyon-juniper and sagebrush vegetation types, although there is considerable species diversity due to unique physiographic and climatic features. About 37 percent of the area is in good range condition, 56 percent is in fair condition, and 7 percent is in poor condition. Trend in range condition is 87 percent static, 4 percent improving, and 9 percent declining. Forage inventories indicate that 47,835 AUMs of livestock and big game forage are presently available.

Although riparian vegetation occupies less than 1 percent of the planning area, it is unique and important to livestock and wildlife. Riparian vegetation is associated with about 40 miles (488 acres) of perennial stream and is

SUMMARY TABLE 1

Alternative Comparisons

Category	Existing or Current Situation	A Optimize Non-Livestock Resources	B Optimize Livestock Resources	C Rangeland Management Recommendation	D Eliminate Livestock Grazing	E Continue Present Management	F Adjust Spring Livestock Use
Initial Allocation (AUMs)							
Cattle	9,039	5,200	9,899	9,484	0	12,495	7,559
Sheep	18,943	11,717	21,212	19,927	0	27,199	17,132
Livestock	27,982	16,917	31,111	29,411	0	39,694	24,691
Deer	15,460	22,619	12,874	14,622	33,151	15,460	15,296
Antelope	120	238	120	120	921	120	120
Elk	1,726	2,361	1,664	1,707	7,127	1,726	1,711
Big Game	17,306	25,218	14,658	16,449	41,199	17,306	17,127
Consumptive Use	45,288	42,135	45,769	45,860	41,199	57,000	40,189
Non-Consumptive Use	2,547	5,700	2,066	1,975	6,636	--	7,646
Total	47,835	47,835	47,835	47,835	47,835	57,000	47,835
Long-Term Allocation (AUMs)							
Cattle		9,493	20,391	12,282	0	12,495	16,452
Sheep		19,059	32,699	24,081	0	27,199	29,806
Livestock		28,552	53,090	36,363	0	39,694	46,258
Deer		26,774	14,999	20,656	43,904	15,460	19,290
Antelope		492	127	199	1,367	120	199
Elk		4,430	1,998	2,249	12,846	1,726	2,237
Big Game		31,696	17,124	23,104	58,117	17,306	21,726
Consumptive Use		60,248	70,214	59,467	58,117	57,000	67,984
Non-Consumptive Use		8,435	3,511	9,025	9,299	0	12,917
Total		68,683	73,725	68,492	67,416	57,000	80,901
Range Developments							
Vegetation Modification (ac.)		15,900	38,475	40,270	6,850	0	27,610
Pipeline (mi.)		10.1	65.6	67.6	0	0	21.1
Reservoirs (ea.)		5	19	17	0	0	17
Troughs (ea.)		0	15	15	0	0	2
Spring (ea)		1	12	16	0	0	7
Raintrap (ea.)		0	2	6	0	0	2
Stocktrails (mi.)		0	3.5	4.25	0	0	3.5
Fences (mi.)		38	127.5	116.0	0	0	71.0
Enclosures (10 acres) (ea.)		0	4	4	0	0	2
Wells (ea)		0	1	1	0	0	0
Gully Plugs (ea.)		0	0	0	0	0	340



Summary Figure 1

INITIAL AND LONG TERM USE LEVELS FOR LIVESTOCK AND WILDLIFE PROPOSED BY ALTERNATIVE

also established around reservoirs, springs, and seeps. While the condition of the riparian vegetation is unknown, it is assumed to be in poor condition. However, fenced portions (about 2 miles) of Otter Creek and the Sevier River may be in good condition.

Soil types are also diverse, reflecting the influence of climate and geology. Soils are characterized by low organic matter content and most have limited development and structure. The majority of soils found in the planning area consist of a silty clay sand mixture (loamy) and are subject to water erosion. Currently, 3 percent of the area is in stable erosion condition, 34 percent in slight erosion condition, 51 percent in moderate erosion condition, 1 percent in severe erosion condition, and 11 percent in critical erosion condition.

Most of the perennial streams are small (3 feet or less in width), subject to flooding, and provide poor quality fish habitat. Most streambanks are in poor condition. Few stream sections (16 miles) support or have the capability of supporting populations of sport fish.

The area is important big game habitat for deer, elk, and pronghorn antelope. Only one allotment in the planning area is rated in good habitat condition by the Utah Division of Wildlife Resources; most of the others are rated in poor condition.

Deer numbers are currently low and are expected to increase. Elk numbers are increasing in the planning area, and antelope numbers are currently static. The bald eagle and peregrine falcon are found in the planning area. However, most of their important habitat is found on private lands. The population of the Utah prairie dog, which inhabits one allotment in the planning area, is thought to be increasing.

Most of the 111 livestock owners using BLM rangelands run cow-calf and ewe-lamb operations. The planning area provides about 3 percent of the public land cattle AUMs and about 7 percent of the public land sheep AUMs in Utah.

Important recreational activities include sightseeing, camping, picnicking, hunting, fishing, off-road vehicle use, snowmobiling, and cross country skiing. Visitor use is increasing and occurs year-round. There are no lands in the planning area with wilderness values.

The number and size of operators in the planning area and their seasonal dependency are shown below:

Size Class	Number	Percent Seasonal Dependency on BLM
Small cattle operators (1 to 99 head)	42	11
Medium cattle operators (100 to 199 head)	14	6
Large cattle operators (200 head or more)	14	7
Small sheep operators (less than 199 head)	6	58
Large sheep operators (200 head or more)	35	48

The area is rural, and lifestyles reflect a strong agricultural dominance, although agriculture's economic importance is declining. In terms of income and employment, government (local, State, and Federal), service and trade, transportation, mining, and construction sectors dominate the economies of the local communities. Residents are characteristically self-reliant, strong-willed people whose independence reflects the traditional western lifestyle.

Environmental Consequences

Analysis of impacts was performed by an interdisciplinary team. The potential effects of implementing each of the six alternatives were evaluated in relation to changes in the existing situation. The results of this analysis are summarized in Chapter 4. Significant impacts by alternative are shown in Summary table 2.

Range Management Decision

This EIS is part of the BLM's decision-making process. An opportunity for additional public involvement is available. Comments dealing with the adequacy of the analysis and other relevant matter may be made during the 60-day comment period on the draft and a 30-day period after the final environmental impact statement is completed.

Following this, BLM will develop a range management decision which will be made available to the public. This decision will establish the BLM range management program for the Mountain Valley Planning Area.

SUMMARY TABLE 2

Comparison of Environmental Consequences[a]

Resource Category[b]	A Optimize Non-Livestock Resources	B Optimize Livestock Resources	C Rangeland Management Recommendation	D Eliminate Livestock Grazing	E Continue Present Management	F Adjust Spring Livestock Use
Vegetation	Beneficial	Beneficial	Beneficial	Beneficial	Adverse	Beneficial
Soil	Beneficial	Beneficial	Beneficial	Beneficial	Adverse	Beneficial
Water Resources	Quality Beneficial Quantity Adverse	Quality Beneficial Quantity None	None	Beneficial	Adverse	None
Animal Life	Beneficial	Adverse	Beneficial Big Game, Prairie Dog Adverse Sagegrouse, Fish	Beneficial Unknown Prairie Dog	Adverse	Beneficial Big Game Adverse Prairie Dog, Sagegrouse, Fish
Livestock Grazing	Adverse	Beneficial	Beneficial and Adverse	Adverse	Adverse	Beneficial
Recreation	Beneficial	Beneficial	Beneficial	Beneficial	Adverse	Beneficial
Socioeconomics	Beneficial	Beneficial to Agricultural Sector None to Wild-life sector	Beneficial	Adverse to Agricultural Sector Beneficial to Wildlife Sector	Adverse	Beneficial

[a]To evaluate the impacts for inclusion in this table, the following question was asked, "Resource environment would undergo what kind of consequences in the long term?".

[b]Visual and cultural resources are not listed because they would not experience any significant consequences.

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CHAPTER 1

PURPOSE AND NEED FOR ACTION

CHAPTER 1
PURPOSE AND NEED FOR ACTION

INTRODUCTION

The Mountain Valley Planning Area is located in south-central Utah (see figure 1-1). It is approximately 114 miles long and has a total area of 689,175 acres. Seventy-two percent (499,972 acres) of this is Bureau of Land Management (BLM) administered public lands (hereinafter referred to as public lands); the remaining lands are State (16 percent, 106,714 acres) and private (12 percent, 82,489 acres). The planning area consists of three planning units (Piute, North Sevier, and Sanpete) and provides forage and habitat for livestock and wildlife, as well as scenic, recreation, and other resource values. For livestock management, the planning area has been divided into 90 allotments. Appendix I-1 lists the allotments.

The arrangement and use of public lands in the planning area are somewhat unique in that they consist of a narrow band (up to 6 miles) sandwiched between National Forest lands in the mountains and private lands in the valley bottoms. State and private lands are also interspersed with this band of public lands.

PURPOSE AND NEED

The purpose of the action--the implementation of a grazing management program in the Mountain Valley Planning Area--is to maintain or improve public land resources such as soil, water, and vegetation through the use of grazing management. As required by law (Taylor Grazing Act, 1934; Classification and Multiple Use Act, Public Law 88-6071, 1964; and the Federal Land Policy and Management Act of 1976), BLM is responsible for management "in a manner that will protect the land and its resources from destruction or unnecessary injury, stabilize the livestock industry dependent on public lands, and provide for the orderly use, improvement, development, and rehabilitation of the public lands for livestock grazing consistent with multiple use, sustained yield, environmental economic, and other objectives" (BLM Manual 4100.0-2 Grazing Regulations).

The 1978 analysis of the range condition and trend in the planning area found 7 percent of the area in poor condition, 56 percent in fair condition, and 37 percent in good condition. (These data are shown by allotment in Appendix I-1.) The analysis also indicated that the condition trend in 88 percent of the planning area is static (not changing). Ocular range inventories conducted in various parts of the planning area in 1957, 1963, 1978, and other current studies indicate that some areas are overstocked. Watershed and soil studies show some areas in need of protection from grazing animals. These situations were summarized during the development of the Management Framework Plan (MFP), and the need for actions to correct the present condition was pointed out.

Further, this Environmental Impact Statement (EIS) is responsive to a suit filed in 1973 by the Natural Resources Defense Council et al., in Federal Court alleging that BLM's programmatic grazing EIS did not comply with the National Environmental Policy Act (NEPA) (42 USC 4321 *et seq.*).

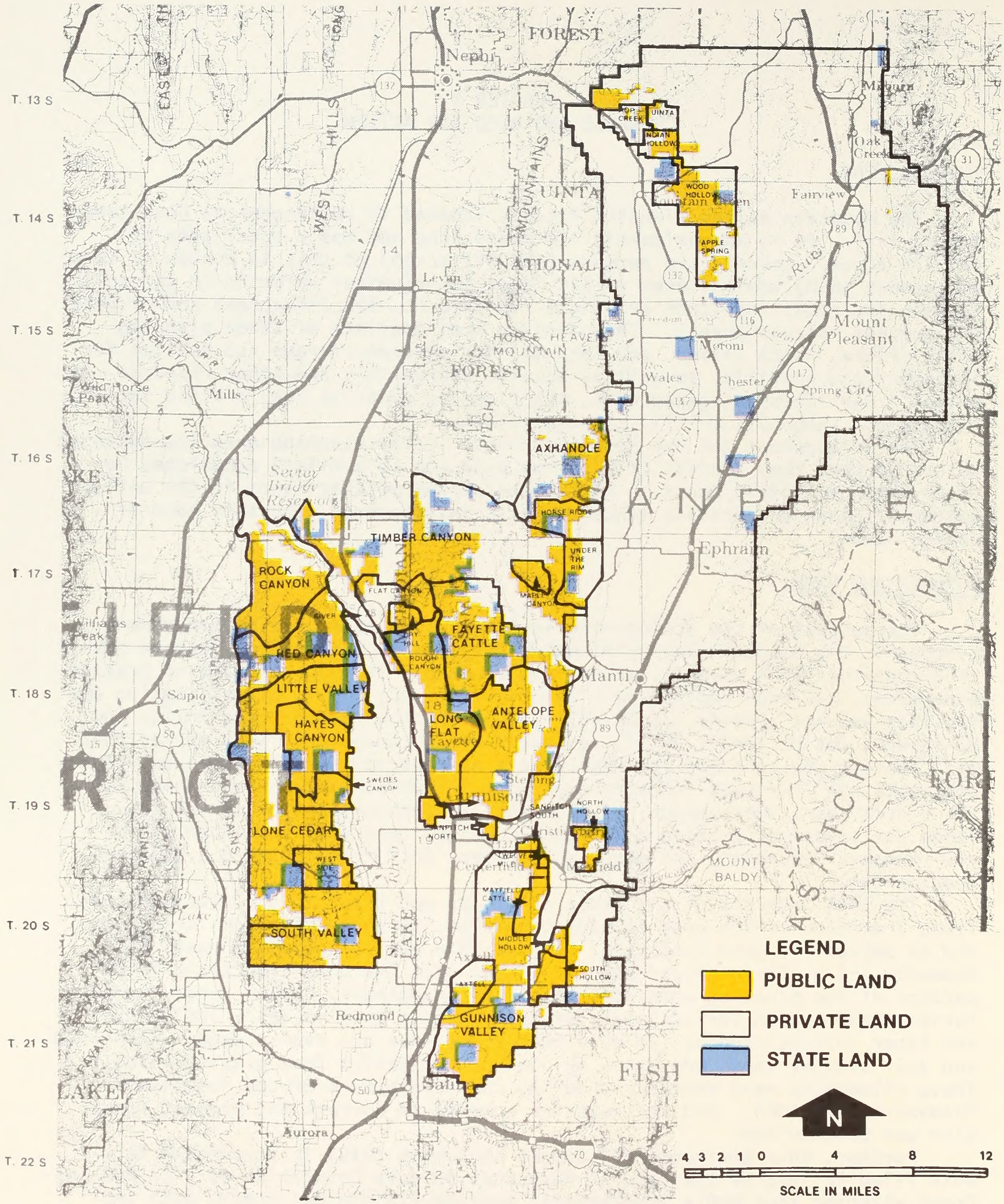

Figure 1-1

LAND USES WITHIN THE PLANNING AREA

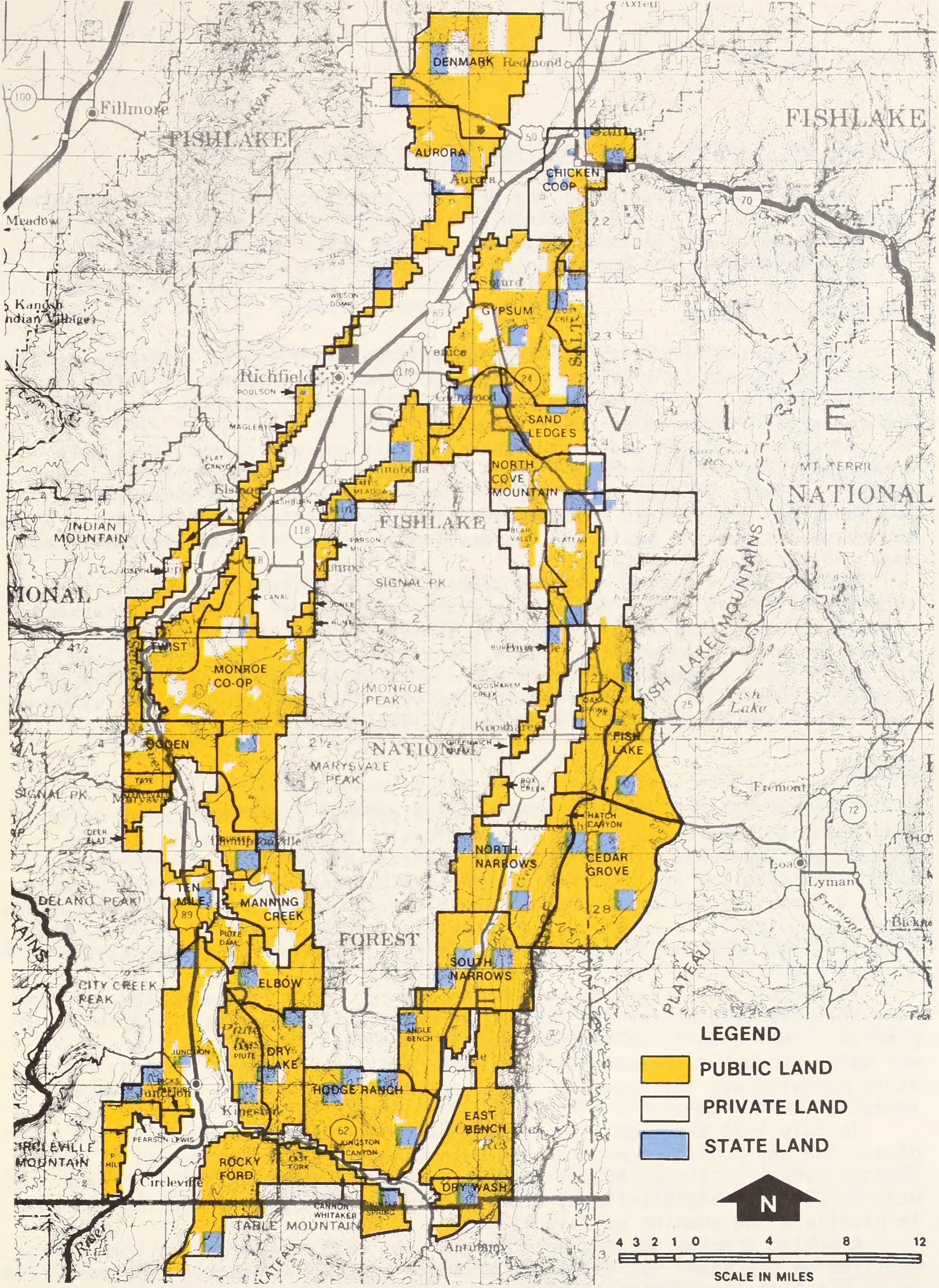

Figure 1-1 (continued)

LAND USES WITHIN THE PLANNING AREA

GENERAL AND PLANNING AREA OBJECTIVES FOR THE RANGELAND PROGRAM

During the preparation of the MFP, the specific objectives for managing rangeland resources in the Mountain Valley Planning Area were developed by various resource specialists. Table 1-1 lists BLM's general rangeland resource objectives and the planning area objectives which relate to them.

THE PLANNING PROCESS

The planning documents for the Mountain Valley Planning Area were updated in 1979 in accordance with BLM Manuals 1601-1608 (see Appendix I-2 for an overview of the planning system). The manuals provide guidance for land use and resource allocation on public lands.

Inventory data on land and resource conditions and capabilities were summarized, recorded, and analyzed in a document called the Unit Resource Analysis (URA). Data on social and economic conditions were summarized, recorded, and analyzed in a document called the Planning Area Analysis. These two documents are the basis for the development of a MFP that addresses land uses and resource allocations.

During Step 1 of the MFP, BLM specialists formulated individual resource recommendations for seven activities (range management, wildlife, watershed, forest products, recreation, minerals, and lands). Conflicts among the individual resource recommendations were identified and analyzed during Step 2 of the MFP. These recommendations concerning range management and related resources were a basis for alternatives analyzed in this EIS. The evolution of one alternative through the MFP process is summarized in table 1-2.

SCOPING

In order to involve public and private groups, individuals, and government agencies interested in the Mountain Valley Planning Area, a scoping process was developed. Scoping is the identification of issues, concerns, interrelationships, and possible alternative courses of action. Furthermore, it is a formal mechanism for BLM to consult with affected or concerned parties. Significant issues to be discussed in detail in the EIS are identified, thus ensuring that agencies do not waste their resources by analyzing issues that are not significant.

The scoping of issues for planning began in April 1979 when the preplanning analysis session for the URA and MFP was initiated. Following the completion of MFP Step 1, an internal scoping session to consider alternatives was held with BLM representatives of state and district range staffs, the state planning and environmental coordination staff, and the environmental impact statement team.

In July 1979 three open houses and one public meeting were held for discussion and public comment on BLM recommendations for management of the planning area. The open houses were held in Manti, Utah on July 10; Junction, Utah on July 11; and Richfield, Utah on July 12. The public meeting was held in Richfield the evening of July 12.

A public scoping meeting held October 16, 1979 (announced in the Federal Register on September 13, 1979) was attended by range users and representatives of Utah's Division of Wildlife Resources (UDWR) and Department of Natural Resources, Fishlake National Forest, Six County Association of Governments, Soil Conservation Service (SCS), Utah Wool Growers Association, and Utah Cattlemen's Association. The guests met with BLM employees on an individual basis

TABLE 1-1

Rangeland Objectives

1. Improve the condition of rangeland vegetation and maintain it at high levels of quality, quantity, and diversity.

   Maintain 38,340 acres presently in optimum ecological condition (33,179 acres in good condition, 3,450 acres in fair condition, and 1,711 in unclassified condition) and continue current forage production of 2,777 animal unit months (AUMs) on 14 allotments.[a]

   Within 20 years, improve range condition on 36,780 acres from fair to good on 14 allotments[b] and increase the carrying capacity from the estimated initial capacity of 6,217 to 10,788 AUMs after improvements.

   Improve range condition from poor to fair on 14,641 acres and from fair to good on 114,381 acres on 32 allotments[c]; reverse the downward trend on 19,711 acres on 17 allotments.[d]

   Reverse the declining trend in range condition on 11 allotments[e] totaling 19,855 acres; maintain 13,228 acres in good condition; improve 21,261 acres from fair to good condition; and 5,623 acres from poor to fair condition.

   Improve the condition of 8,360 acres of big game winter range on the Gunnison Valley, Gypsum, North Narrows and South Narrows Allotments.

   Improve about 28,000 acres of wildlife habitat and 4.5 miles of stream in the Piute Planning Unit through existing Habitat Management Plans (HMPs).

2. Reduce erosion, minimize sedimentation and siltation, promote infiltration, and ensure the stability and productivity of rangeland soils.

   Reduce soil surface factors (undesirable soil surface characteristics) and annual sediment yield on public lands on 104,135 acres within 20 years.

   Maintain present soil surface factors and present sedimentation rates on 160,000 acres for 20 years.

3. Ensure that water of sufficient quantity and quality is available to meet Federal and State water quality standards and provide for recognized uses.

   Meet State and Federal water quality standards for surface waters on all 90 allotments (499,972 acres) within 20 years.

(continued)

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4. Ensure long-term stability of the western livestock industry and the economies of many western communities dependent upon the public lands through cooperation in management.

   Combine allotments to simplify administration and enhance effectiveness and utilization of managing 41 allotments plus other small and isolated tracts (247,382 acres). Proposed allotment combinations are shown in Appendix I-1, table B.

5. Increase forage supplies for livestock and wildlife as a principal output of improvement of the rangeland ecosystem.

   Increase the grazing capacity from 11,587 to 23,304 AUMs on 15 allotments within 20 years and improve range condition from fair to good on 102,176 acres and from poor to fair condition on 5,521 acres.

6. Ensure the protection of threatened or endangered plant and animal species and their habitat.

   Provide three transplant sites for the endangered Utah prairie dog in the North Sevier and Piute Planning Units for use to establish separate colonies of 30 to 100 breeding animals (spring count) per colony.

7. Provide and protect habitat for fish and wildlife to ensure stability and natural diversity.

   Maintain the quality and present condition of 77,478 acres of critical mule deer winter range.

   Maintain at least the present level of quality on 6,330 acres of big game winter range in the planning area.

   Provide forage and water for the existing population of 96 antelope on public lands and allocate adequate forage for an increase to 199 animals.

   Provide sufficient forage and water for the present mule deer population of 17,315 and for an expanded population of 41,140.

   Provide forage and water for the existing elk population of 656 and for an increase to 700.

   Improve 40,000 acres of sagegrouse habitat in the North Sevier Planning Unit.

(continued)

TABLE 1-1 (concluded)

8. Manage floodplains and wetlands to improve and conserve riparian systems.

Improve 3.75 miles of riparian habitat on Peterson Creek in the North Sevier Planning Unit.

Improve 2.25 miles of stream and riparian habitat on Lost Creek in the North Sevier Planning Unit.

[a] Apple Spring, Chicken Coop, Deer Flat, Dry Hill, Hayes Canyon, Jones, Long Flat (Sanpete), Marysvale, Plateau, Rick's Pasture, Uinta, Under the Rim, Wood Hollow.

[b] Antelope Valley, Bear Valley, Box Creek, Fayette Cattle, Flat Canyon(s), Hop Creek, Indian Hollow, Joseph, Maple Canyon, North Cove Mountain, Pearson-Lewis, Poulson, Rough Canyon, South Valley.

[c] Axtell, Angle Bench, Burrville, Canal, Dry Lake, Dry Wash, Durkee, East Bench, East Fork, Elbow, Greenwich Creek, Gunnison Valley, Hatch Canyon, Hodge Ranch, Hunt, Hunter Spring, Junction, Koosharem Creek, Lost Creek, Magleby, Manning Creek, Ogden, Parson-Mills, Red Canyon, River, Rock Canyon, Sand Ledges, Sanpitch, Tate, Ten Mile, Twelve Mile, Twist.

[d] Axtell, Angle Bench, Dry Lake, Dry Wash, East Bench, Gunnison Valley, Hatch Canyon, Hodge Ranch, Junction, Manning Creek, Red Canyon, River, Rock Canyon, Sanpitch, Ten Mile, Twelve Mile.

[e] East Piute, Flat Canyon (N. Sevier), Kingston Canyon, Little Valley, Mayfield Cattle, Middle Hollow, North Hollow, Piute Dam, Rocky Ford, Sall's Meadow, South Hollow.

[f] Axhandle, Aurora, Cedar Grove, Denmark, Fishlake, Gypsum, Horse Ridge, Lone Cedar, Monroe Coop, North Narrows, Oak Spring, South Narrows, Swedes Canyon, Timber Canyon, West Side.

TABLE 1-2

Evolution of Alternative C through the MFP Process

Livestock MFP 1 Recommendations	Recommendations That Conflict With Range	MFP 2 Range Recommendation	Rationale for MFP 2 Recommendations	Trade-off
A. Initial Allocation				
Allocate the following AUMs: Cattle 9,899 Sheep 21,212	Allocate the following AUMs: Deer 22,619 Antelope 238 Elk 2,361	Allocate the following AUMs: Cattle 9,484 Sheep 19,927 Deer 14,622 Antelope 120 Elk 1,707	An intermediate level of livestock grazing could benefit big game and watershed.	Change in allocated AUMs: Cattle -415 Sheep -1,285 Deer -7,997 Antelope -118 Elk -654
Apply the following range development program: Vegetation modification 38,475 ac. Pipeline 65.6 mi. Reservoirs 19 ea. Troughs 15 ea. Springs 12 ea. Raintraps 2 ea. Stock trail 3.5 mi. Fence 127.5 mi. Exclosures 4 ea. Well 1 ea.	Apply range developments which directly benefit wildlife. The development program would be: Vegetation modification 15,900 ac. Pipeline 8.6 mi. Fence 38 mi.	Provide the following range developments: Vegetation modification 40,270 ac. Pipeline 67.6 mi. Reservoirs 17 ea. Troughs 15 ea. Springs 16 ea. Raintraps 6 ea. Stock trail 4.25 mi. Fence 116 mi. (6 mi. riparian) Exclosures 4 ea. Well 1 ea.	Range developments for livestock and big game should be included. Demonstrated need for riparian protection warrants streambank fencing.	Change in developments. Vegetation modification +1,795 ac. Pipeline +2.0 mi. Reservoirs -2 ea. Fence -11.5 mi. Loss of livestock grazing on riparian areas.
Implement grazing treatments to optimize livestock grazing use as listed below.	Implement grazing treatments to optimize big game use (as listed below).	Implement grazing treatments which compromise vegetation use between livestock and big game as listed below.	Grazing treatments should provide sufficient protection to rangeland resources, especially soil, water, and vegetation in all of the treatments listed.	Change of acres in different grazing treatments as listed below.
Provide complete spring rest on 18,589 acres (five allotments).	Reserve all forage for wildlife use on 15,666 acres (five allotments).	Eliminate spring livestock use on 16,563 acres (five allotments).		Complete spring rest would not occur on 2,026 acres.
Allow spring grazing on 373,305 acres (25 allotments) 3 out of 4 years.	Allow spring grazing for livestock on 348,722 acres (24 allotments).	Allow spring grazing for maximum livestock production on 374,405 acres (26 allotments).		Spring grazing would be increased by 1,100 acres to maximize livestock production.
Allow light spring grazing (25 percent annually) on 599 acres (one allotment).	Allow light spring grazing (25 percent annually) for livestock on 599 acres (one allotment).	Allow light spring grazing (25 percent annually) on 599 acres (one allotment).		No change.
Graze 20,762 acres to provide maximum browse production.	Graze 7,000 additional acres to increase browse production.	Allow maximum browse production on 21,526 acres.		Browse production would be maximized on an additional 764 acres.
Allow livestock grazing in the spring, along with other seasons, on 86,217 acres (20 allotments).	Cut back multiple season grazing to 75,843 acres (16 allotments).	Allow multiple season grazing on 86,879 acres (18 allotments).		Multiple season grazing for maximum livestock production would be increased by 662 acres.
Graze livestock on all allotments.	Eliminate grazing by livestock on 31,159 acres.	Allow livestock grazing on all allotments.		No allotments would be eliminated from grazing.
B. Long-Term Allocation				
The long-term allocation would be: Cattle 20,391 Sheep 32,699	The long-term allocation would be: Deer 26,774 Antelope 492 Elk 4,430	The long-term allocation would be: Cattle 12,282 Sheep 24,081 Deer 20,656 Antelope 199 Elk 2,249	Vegetation production increases should be allocated to provide maximum social and economic values at a sustained level.	Change in allocated AUMs: Cattle -8,109 Sheep -8,618 Deer -6,118 Antelope -293 Elk -2,181

to discuss the five proposed alternatives (see Alternatives A through E listed below) and identify issues and concerns related to grazing management in the planning area.

The majority of those participating in the scoping process identified the need for improvement of range condition, vegetation cover, improved forage production, and watershed protection as the most significant issues of concern. Most people recognized the importance of protecting threatened and endangered plant or animal species and archaeological and historical resources; however, they felt that the requirements for these resources should be enforced only in site specific areas and should not govern the range management program for the entire area.

Other concerns and issues were big game and livestock winter range conflicts. The planning area is an important big game winter range. UDWR is concerned about the reduction of wildlife forage that could result from authorizing livestock grazing in areas currently not grazed. They also expressed concern about the effect that livestock grazing could have on riparian vegetation.

The major concern of livestock owners was reduction of income due to lower allocation of animal unit months (AUMs) for livestock. They felt that farm and ranch operation costs would increase if allotments were combined to create multiple pastures or if seasons of use for livestock were changed. Most livestock owners did not feel that big game herds should be increased at the expense of the livestock industry. They also felt that control of predators is a problem.

ALTERNATIVES

Six alternatives have been identified for discussion in this DEIS. Alternatives C and F have been identified as environmentally preferred alternatives.

A. Optimize non-livestock resources.

B. Optimize livestock grazing.

C. Rangeland management recommendation (environmentally preferred alternative).

D. Eliminate livestock grazing.

E. Continuation of present management, or no action.

F. Adjust spring livestock use (environmentally preferred alternative).

ALTERNATIVES DISMISSED

One suggested alternative was to implement a 3-year intensive study and monitoring program using the present level of forage use. This alternative was not addressed because it is felt that the existing data are adequate to implement management programs on most allotments and that benefits to resources and users would be enhanced by implementation. Further, since some of the rangeland in the Mountain Valley Planning Area is deteriorating, there is

a need to make timely adjustments to improve range condition. Range developments, allocations, and grazing treatment changes are required to improve vegetation production and range conditions.

INTERRELATIONSHIPS

Since the public lands in the Mountain Valley Planning Area are interspersed with private- and State-owned lands, this creates a situation where management and use of adjacent lands has a strong influence on BLM-administered lands. Close coordination between land management agencies is necessary to accomplish common goals and avoid resource use conflicts. Table 1-3 identifies interrelationships between the BLM rangeland management program and other groups, individuals, and agencies.

CONSULTATION AND COORDINATION IN PREPARATION OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

1. Federal Contacts

The following table lists the contacts initiated and actions completed in preparation of the draft statement. Comments received from the agencies were considered in preparation of the statement.

Agency	Nature of Contact	Response	Action Taken
Soil Conservation Service	Requested information on soil loss.	Yes	Information provided.
Economics, Statistics & Cooperative Service	Cooperative agreement to provide ESCS with data about local ranching operations; in return they provide ranch budget analysis for BLM.	Yes	Information provided.
Forest Service	Requested input-output analysis of impacts to regional economy resulting from proposed alternative action.	Yes	Data presented.

TABLE 1-3

Interrelationships of BLM Rangeland Management and Other Individuals or Agencies

Agency/Group Relationship and Responsibility	Interrelationship
FEDERAL AGENCIES	
Fish and Wildlife Service (FWS) Responsible for protection of of threatened and endangered species of plants and animals and their habitat. Administers predator control program.	Issued a biological opinion on the effects of livestock grazing on the endangered Utah prairie dog found on one allotment in this planning area. BLM authorizes the majority of the allotments in this planning area for predator control. The actual control work is done by the FWS under an ongoing predator control program.
Forest Service (FS) Administers higher elevation summer ranges within the Dixie, Fishlake and Manti-Lasal National Forests.	Sixty-eight of the 167 livestock operations in the planning area depend upon adjoining Forest Service lands and coordination of seasons-of-use which allow for rounding out of livestock operations on FS, BLM, and private ranges. Joint wildlife studies that provide a basis for recommendations on big game harvest involve work with FS, BLM, and others to coordinate management objectives.
Soil Conservation Service (SCS) Provides cooperative programs and technical assistance to livestock and ranch operators on private lands. Basically provides information and assistance to improve productivity and reduce soil loss by plans and practices of farm and ranch properties which may include BLM land. Provides monitoring of cost sharing programs and cooperative land use planning.	Many range allotments contain private lands on which the landowners have requested aid in the development of range management plans.

(continued)

Table 1-3 (concluded)

Agency/Group Relationship and Responsibility	Interrelationship
STATE OF UTAH	
Division of Lands Responsible for leasing State-owned lands to private individuals to provide sustained income to the State. These lands may be grazed in connection with public lands if under exchange-of-use agreement with BLM.	The BLM and Division of Lands coordinate the leasing of State lands to those individuals who have BLM grazing permits in allotments containing State lands. The Division of Lands also assists in the planning of range developments which affect both lands.
Division of Wildlife Resources (UDWR) Responsible for protection, management, and conservation of wildlife species.	In cooperation with UDWR, the BLM collects and provides data for ongoing wildlife habitat management and land use planning. Coordinates vegetation modification and range improvement projects.
Utah Board of Big Game Control Establishes hunting seasons, dates, special and controlled hunts, bag limits, kind, sex, and number of animals to be harvested.	BLM provides data through a Federal representative on range condition and forage availability along with management plans for consideration by the Board.
Utah State Historic Preservation Officer Responsible for the cultural and historical values in the State. They are protected by agreement between the two agencies. Protection and mitigation is also authorized under FLPMA, 1976, and the National Historic Preservation Act, 1966.	The State Historic Preservation Officer cooperates in the evaluation of expected impacts related to the proposed actions.
LIVESTOCK OPERATORS	
Livestock operators utilize BLM-administered rangelands for part of their yearlong operations. Private lands may be grazed in conjunction with public lands.	Implementation of the grazing management program of the BLM is carried out by the 111 private operators permitted to graze their livestock on public lands.

2. State Contacts

Agencies of State government having jurisdictional interest or special expertise in the project have been contacted and have supplied statement data.

Agency	Nature of Contact	Response	Action Taken
Utah Division of Wildlife Resources	Requested information on fish and game numbers and habitat in the planning area.	Yes	Information provided.
Utah State Historic Preservation Officer	Requested consultation regarding Section 106 of the National Historic Preservation Act: preparation of a Memorandum of Understanding.	Yes	Memorandum of Understanding prepared and signed.

3. Local Government

The following public officials at the local level were advised of the alternative grazing programs. Their views and comments were considered in preparation of the statement.

Agency	Nature of Contact	Response	Action Taken
Six County Association of Governments	Requested information on streambank condition and water quality in perennial streams in the planning area.	Yes	Information provided from 208 water quality studies.

CHAPTER 2

DESCRIPTION OF ALTERNATIVES

CHAPTER 2
DESCRIPTION OF ALTERNATIVES

INTRODUCTION

This chapter describes the alternatives and compares the environmental consequences of each. The part describing alternatives is divided into three sections. Section one describes the basic features that vary between alternatives (vegetation allocation, allotment combinations, range developments, and grazing treatments). These basic features will not be repeated except to identify variations in area, amount, or type as pertinent to each alternative. A description of individual alternatives, providing the rationale, proposed action, and change agents, is included in the second section. The final section deals with administrative features required in all alternatives. These features include monitoring and study, implementation, grazing administration, standard design, construction and operating features, and development costs.

BASIC FEATURES THAT VARY BETWEEN ALTERNATIVES

The presentation in this section is given prior to the description of the alternatives because this information is necessary to understand the differences and rationale for each alternative.

Vegetation Allocation

The vegetation allocation is a function of the vegetation production, utilization allowed, kinds of animals, and seasons of use. This Environmental Impact Statement (EIS) will discuss the allocation at two points in time (initial and long term) in comparison with the current use of vegetation. The initial allocations are those levels of use to be implemented following the completion of Allotment Management Plans (AMPs) (1 to 5 years), and the long-term allocations are those levels predicted to occur 5 to 20 years after implementation. Table 2-1 shows proposed vegetation allocations for each kind of animal. As each alternative was developed, suggested levels of use were made by various interest groups. For example, the prior stable level was suggested by the Utah Division of Wildlife Resources (UDWR) as a basic goal for deer.

The total vegetation produced in the Mountain Valley Planning Area is unknown; however, the total usable vegetation has been determined by range surveys and evaluations. Total usable vegetation is derived by estimating proper use levels for each of the plants grazed by the various kinds of animals. (For a further explanation of the determination of available vegetation, see Appendix II-2). From these plants, key species are determined. Key plant species are those forage plants which are abundant in the plant community, are preferred by livestock and big game, and whose abundance can be changed by different levels of grazing and vegetation modification. They serve as indicators of the degree of grazing use made by livestock and big game. (See Appendix II-3 for a listing of key plant species by allotment.)

Studies have shown that, under most circumstances, by allowing 50 percent of the annual growth of most range plant species to remain unused by grazing livestock and big game, physiological needs of the plant and watershed requirements are met (Hederick, 1958; Garrison, 1953). Having satisfied these needs, the total usable vegetation is then derived by allowing livestock and big game

TABLE 2-1

Initial and Long-Term Allocation of Usable Vegetation (AUMs)[a]

Term and Kind of Animal	Existing Licensed Use (Last 6-10 Years)	Alt. A Optimize Non-Livestock Resources	Alt. B Optimize Livestock Grazing	Alt. C Rangeland Management Recommendation	Alt. O Eliminate Livestock Grazing	Alt. E Continue Present Management	Alt. F Adjust Spring Livestock Use
Initial Allocation							
Cattle	9,039	5,200	9,899	9,484	0	12,495	7,559
Sheep	18,943	11,717	21,212	19,927	0	27,199	17,132
Livestock	27,982	16,917	31,111	29,411	0	39,694	24,691
Oeer	15,460	22,619	12,874	14,622	33,151	15,460	15,296
Antelope	120	238	120	120	921	120	120
Elk	1,726	2,361	1,664	1,707	7,127	1,726	1,711
Big Game	17,306	25,218	14,658	16,449	41,199	17,306	17,127
Consumptive Use	45,288	42,135	45,769	45,860	41,199	57,000	40,189
Non-Consumptive Use	2,547	5,700	2,066	1,975	6,636	--	7,646
Total	47,835	47,835	47,835	47,835	47,835	57,000	47,835
Long-Term Allocation[b]							
Cattle		9,493	20,391	12,282	0	12,495	16,452
Sheep		19,059	32,699	24,081	0	27,199	29,806
Livestock		28,552	53,090	36,363	0	39,694	46,258
Oeer		26,774	14,999	20,656	43,904	15,460	19,290
Antelope		492	127	199	1,367	120	199
Elk		4,430	1,998	2,249	12,846	1,726	2,237
Big Game		31,696	17,124	23,104	58,117	17,306	21,726
Consumptive Use		60,248	70,214	59,467	58,117	57,000	67,984
Non-Consumptive Use		8,435	3,511	9,025	9,299	0	12,917
Total		68,683	73,725	68,492	67,416	57,000	80,901

Source: Appendix II-1.

[a]The proposed level of use for each allotment is shown by alternative in Appendix II-1.

[b]The available vegetation for each alternative is different because of the range developments and grazing treatments proposed for each.

use of 50 percent of the key plant species. Because different kinds of animals prefer different key species and each plant community produces different mixtures of individual key species, some key and other plant species remain unused after 50-percent overall utilization is achieved. This remaining vegetation is, therefore, unusable and is not allocated to any kind of animal but is listed as non-consumptive use.

The amount of vegetation (vegetation production) allocated in the planning process is based on currently available data (Appendix I-1). These data are derived from 1957 to 1963 range surveys and updated range surveys in the Piute and North Sevier Planning Units, and 1978 range surveys in the Sanpete Planning Unit.

The initial allocation in the several alternatives is based on vegetation production and does not exceed 50-percent average utilization of the key plant species (except Alternative E). For the planning area, the overall usable vegetation production level is 47,835 animal unit months (AUMs).

Trend, range potential and condition, and predicted results from range developments and grazing treatments were used, in addition to the range surveys, for determining long-term vegetation production. That long-term production is based on 50-percent average utilization of the key plant species and is used for determining the long-term allocation. Levels higher or lower than the initial allocation could occur in any year as a result of the monitoring program. However, at year 20 all of the allotments would be expected to produce sufficient vegetation to support the long-term allocations.

The changes and proposed levels of use for each allotment, by alternative, is shown in Appendix II-1, tables A through F. Figures in each of the alternative descriptions will show the basic changes in the allocation compared to the existing situation. Adjustments in the allocation of grazing permits would be made by BLM following administrative procedures. Adjustments in big game allocations would be accomplished through BLM and UDWR recommendations to the Utah Board of Big Game Control. These recommendations could include the establishment of controlled or special hunts.

Allotment Combinations

In Alternatives A, B, and C, allotment combinations have been proposed which would improve grazing administration in the area. Some of the 90 existing allotments would be combined to form new allotments, resulting in a total of 59 allotments. Appendix II-1 lists the allotments that would result from implementation of the alternatives along with the proposed levels of use, range improvements, and grazing treatments involved. The allotments involved in each combination are described in detail in Appendix I-1, table B.

Range Developments

Range developments in the alternatives are of two types. They consist of vegetation modification (chaining, seeding, burning, plowing, spraying [with 2,4-D], contour furrowing, and mixtures of these modifications) and support facilities (water developments, pipelines, reservoirs, troughs, spring developments, raintraps or wells, stock trails, fences, and exclosures).

The kinds and amounts of range developments proposed in each alternative vary. Range developments are designed to protect rangelands, increase productivity for wildlife or livestock, and/or correct rangeland problems in the area by increasing vegetation production to improve soil cover, range condition and trend, and watershed condition. Table 2-2 provides an overview of

TABLE 2-2

Proposed Range Developments

Range Development	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
Chain/seed (ac)	10,080 (13)[a]	26,075 (23)	26,375 (25)	3,480 (3)	0	15,410 (20)
Plow/seed (ac)	250 (1)	250 (1)	250 (1)	0	0	1,000 (2)
Contour/seed (ac)	1,200 (1)	1,200 (1)	1,200 (1)	0	0	6,500 (7)
Seed Browse (ac)	2,570 (3)	1,075 (1)	2,570 (3)	2,770 (3)	0	200 (1)
Burn (ac)	0	2,450 (2)	2,450 (3)	0	0	
Burn/seed (ac)	600 (1)	2,220 (3)	2,220 (3)	600 (1)	0	1,900 (2)
Seed (ac)	0	1,000 (1)	1,000 (1)	0	0	
Spray/2,4-D (ac)	1,200 (2)	4,205 (6)	4,205 (6)	0	0	2,600 (3)
Total Vegetation Modification	15,900 (15)	38,475 (28)	40,270 (33)	6,850 (5)	0	27,610 (31)
Pipeline (mi)	10.1 (5)	65.6 (16)	67.6 (16)	0	0	21.1 (10)
Reservoirs (ea)	5 (2)	19 (9)	17 (8)	0	0	17 (8)
Trough (ea)	0	15 (4)	15 (4)	0	0	2 (1)
Spring Dev. (ea)	1 (1)	12 (8)	16 (10)	0	0	7 (4)
Raintraps (ea)	0	2 (2)	6 (6)	0	0	2 (2)
Well (ea)	0	1 (1)	1 (1)	0	0	0
Stock trail (mi)	0	3.5 (3)	4.25 (3)	0	0	3.5 (3)
Fence (mi)	38 (12)[b]	127.5 (16)	116 (16)[b]	0	0	71 (12)
Exclosures (ea)	0	4 (4)	4 (4)	0	0	2 (2)
Gully plugs (ea)	0	0	0	0	0	340 (5)

Source: Appendix II-1.

[a]Figures in parentheses indicate the proposed number of allotments.

[b]Includes riparian fencing.

the range developments for each alternative; those developments proposed for individual allotments are listed in Appendix II-1.

The kinds of vegetation modification proposed have been examined during the preparation of the Management Framework Plan (MFP). They have all been applied successfully in the planning area. Factors such as soil, climate, topography, existing vegetation, and current wildlife use have been evaluated to determine the degree of improvement that could be expected in vegetation production and soil and vegetation condition. That improvement has been factored into the available vegetation for allocation in the long term.

The following criteria were used to determine which allotments contained areas where vegetation modification should be proposed.

1. Need for measures that would reverse downward trend in range condition within an acceptable period of time (e.g., 5 years on sensitive sites).

2. Need to improve range condition and site productivity to an acceptable level within a reasonable period of time (e.g., 15 to 20 years) if grazing treatments alone would not meet this level.

3. Suitability of the site for grazing livestock and/or for wildlife habitat based on suitability criteria.

4. Soil suitability for vegetation modification. Soils should be deep, low in soluble salts, and possess physical properties (texture and structure) favorable to soil moisture storage. Effective root depths of 18 inches or more are desirable (Robinson, 1979). Soils with soluble salts in excess of 1 percent (particularly sodium) are not suitable for restoration measures. Treatment of rocky soils and landscapes may be limited to burning or spraying with selective herbicides (Plummer et al., 1968).

5. Suitability of the slope to sustain vegetation modification. Slopes of less than 20 percent are generally best suited for restoration treatment. Slopes of up to 50 percent can be chained and burned with care. Slopes exceeding 50 percent are not considered for treatment except for stabilizing soils and reducing runoff (Plummer et al., 1968; Vallentine, 1974).

6. Availability of soil moisture for vegetation modification. Precipitation in excess of 9 inches is generally essential for successful restoration projects. Crested wheatgrass (Agropyron cristatum, A. desertorum) and Russian wildrye (Elymus junceus) can be successfully seeded where the annual precipitation exceeds 10 inches; such species as intermediate wheatgrass (Agropyron intermedium) require in excess of 13 inches (Cook, 1966; Plummer et al., 1968; Vallentine, 1974).

7. Needs of grazing animals, e.g., seeding to furnish early spring growing grasses for livestock, to make more desirable browse and forbs available for wintering wildlife and/or livestock, etc. (Cook and Harris, 1968; Frischknecht and Stevens, 1979).

The determination of the kind of vegetation modification to be proposed depends on the current vegetation and soil conditions. Spraying and burning are proposed to control sagebrush where there are at least one desirable shrub and ten desirable forbs per 100 square feet and at least one key grass plant encountered each one or two paces across the site (Plummer et al., 1968). Burning also requires sufficient plant material to carry a fire; however, if the area is critical to animal life, burning is not acceptable.

Where insufficient desirable plant cover occurs, seeding would be required. In addition to usable grasses, various mixtures of shrubs and forbs should be planted (Frischknecht and Stevens, 1979).

The method of seedbed preparation could vary depending on the cover type of the site. Chaining is the most useful in controlling pinyon-juniper areas, while both plowing and chaining can control sagebrush and leave a desirable seedbed.

If plant cover is low and excessive on-site runoff and erosion are occurring, contour furrowing and structures such as gully plugs would be required to establish a desirable vegetation community (Robinson, 1979).

In all vegetation modifications, rest from livestock use must be scheduled following completion of projects. Soil-disturbing projects would be provided at least 2 full years of rest, while two growing seasons could be sufficient for burning or spraying. However, all projects would be examined, and livestock grazing would not be allowed on the area until new plants were capable of supporting grazing use. Standard design features applicable to vegetation modifications are discussed under that heading later on in this chapter.

Water developments, fencing, stock trails, and other supporting range facilities would be installed on allotments to be used in combination with vegetation modifications, grazing treatments, and other management tools to improve range conditions, protect the important habitat areas, and correct some long existing rangeland problems.

Grazing Management Treatments

Grazing treatments include livestock grazing and non-grazing during different seasons and at different levels on a pasture or allotment to meet the physiological needs of key plant species. The grazing treatments proposed in the alternatives vary according to the needs of different plant species; the current range condition of the allotment; the kind of grazing animal; the soil erosion condition; and the period of grazing needed by the livestock operator. Grazing treatments should not be confused with grazing systems. Grazing systems incorporating these treatments would be described in the individual AMPs that would be prepared following decisions made by the District Manager after completion of this EIS and MFP Step 3. Those systems would further define the treatments proposed here and would provide more detail regarding on-the-ground management.

The following six grazing treatments describe the actions which would be applied to manage the rangeland resources in the planning area. The criteria for the application of treatments to individual allotments are shown in Appendix II-4. Basic rationale for all grazing treatments is to meet the physiological needs of key plant species. This can be accomplished by the proper combination of season and level of grazing use (Stoddard et al., 1975). Table 2-3 lists the acreage and number of allotments proposed for each treatment by alternative.

TABLE 2-3

Proposed Grazing Treatments

	Alternatives										
	A		B		C		D	E		F	
Grazing Treatment	Acres	Allotments	Acres	Allotments	Acres	Allotments	Acres	Acres	Allotments	Acres	Allotments
1. Spring Rest	10,360	3	18,589	5	16,563	5	0	39,633	12	38,970	11
2. Spring Rest 1 out of 4 years	347,909 294,782[a]	23 20	373,805	25	374,405	26	0	24,202	1	0	--
3. Limited Spring Use	599	1	599	1	599	1	0	0	--	447,678 461,002[a]	73 79
4. Spring Grazing Only	28,645 20,643[a]	8 6	20,762	8	21,526	9	0	0	--	0	--
5. Continue Present Grazing	94,512	15	86,217	20	86,879	18	0	431,016	72	0	--
6. Rest Total Allotment	17,947 79,076[b]	9 14	0	--	0	--	499,972	5,121	5	13,324 0	6 0

Source: Appendix II-1

[a]This figure represents the long-term situation. In all other cases, the initial situation would not change in the long term.

[b]This figure represents the initial situation. However, in the long term, livestock grazing would return to five allotments in order to control grass competition with browse on crucial deer winter range. The allotments and treatments involved are: (1) treatment 2: New Monroe Co-op (25,083 acres); New North Cove (19,684 acres); New Sand Ledges (8,360 acres); and (2) treatment 4: Horse Ridge (5,906 acres); South Hollow (2,096 acres).

Total rest from livestock grazing is proposed initially on some allotments; however, livestock grazing would resume in the long term on allotments where livestock grazing is needed to control grass competition with browse on critical deer winter range.

In the discussion below, when rest treatments are not specifically identified, rest includes that part of the year not identified for grazing.

Treatment 1: Spring Rest

This treatment proposes rest from livestock use from April 1 to June 30 (spring season) annually to increase plant production and density and improve range and erosion conditions. Livestock use would be allowed during a designated season outside of this period. Vegetation utilization would not exceed 50 percent of the current annual production of key plant species. This treatment would apply to those allotments in the planning area where grazing is scheduled for fall, winter, and summer.

This treatment would improve the vigor of plants by providing spring rest. Basic studies show that spring rest from livestock grazing allows plants to grow and meet their physiological needs while soil moisture and temperature are favorable (Stoddard et al., 1975). Rest also encourages increased plant density by allowing seedling establishment. Plant vigor can be restored in established plants, thus producing viable seed and providing needed cover for soil and animal life use.

Treatment 2: Spring Rest 1 Out of 4 Years While Allowing Grazing in Other Seasons

Rest and grazing would be rotated during the designated season of use to provide rest at least 1 out of 4 years during the spring season to improve plant vigor and production. Vegetation utilization would not exceed 50 percent of the current annual production of key plant species. This treatment would be applied to those allotments where grazing is scheduled during spring and other seasons and where allotments would be combined. This treatment is proposed to improve present plant production and vigor and reduce soil erosion.

Providing spring rest 1 out of every 4 years would restore plant vigor and improve established vegetation conditions (Cook, 1971).

Treatment 3: Limited Spring Use (25 Percent) Along With Other Periods of Use

Livestock would be allowed to graze during all or part of the spring season and for a designated season during the balance of the year. Utilization would be limited to 25 percent of the current spring growth and to 50 percent of the total annual growth of key plant species to improve range condition and trend. This treatment is proposed to improve those allotments in poor condition and/or declining trend.

This treatment prescribes light grazing use during the spring period and moderate use during the remainder of the year. C. Wayne Cook (1971) has shown that range condition can be improved on most ranges by grazing at these prescribed levels.

Treatment 4: Spring Grazing Only

Livestock would graze during the spring season with rest occurring during remaining seasons, thus increasing browse production by limiting competition

from grasses. Livestock would be removed from the range before utilization of browse occurred. Spring grazing is proposed to improve browse condition on critical deer winter ranges.

This treatment allows livestock to make use of spring season grasses. Grass vigor is held below optimum and available soil moisture is used for browse production (Jensen et al., 1972; Frischknecht et al., 1979). The rest period allows maximum browse production for use by big game. This treatment would be applied to those allotments where browse conditions are in need of improvement for use by big game.

Treatment 5: Spring Grazing Along With Other Seasons of Use

Grazing would occur during the spring, with periods of use extending beyond this season or recurring throughout the year to maintain present vegetation condition. This treatment would be applied or allowed to continue on allotments where vegetation condition and trend are satisfactory and for all allotments in Alternative E (Continuation of Present Management). It is assumed that the present levels of use have caused the existing condition and, that to maintain this condition, they should be allowed to continue.

Treatment 6: Rest Total Allotment From Livestock Grazing

No livestock grazing would be allowed on allotments where vegetation allocation is needed and necessary to sustain wildlife or to improve range and watershed conditions. This treatment is proposed in Alternative D and on those allotments where livestock grazing currently does not occur or is not proposed. With this treatment, vegetation would improve to a point that stagnation occurred unless big game use was heavy enough to stimulate plant production (Tueller and Tower, 1979). Grazing would be restored to some of these allotments when vegetation production increased.

DESCRIPTION OF ALTERNATIVES

ALTERNATIVE A: OPTIMIZE NON-LIVESTOCK RESOURCES

This alternative was developed by the Bureau of Land Management (BLM) during the planning process, evolving from resource recommendations made in the MFP Step 1. All resources other than livestock grazing would be given first priority use of vegetation (i.e., watershed, animal life, recreation, visual resources, etc.). The projected vegetation needs for other resources would be satisfied before any vegetation would be allocated to livestock.

Deer, elk, and antelope would be allocated all available and usable big game forage production. However, deer, elk, and antelope would not, in most cases, utilize this total allocation until their numbers increased. Until such time as this increase took place, all vegetation allocated to big game would be held in reserve.

The following are specific actions for this alternative.

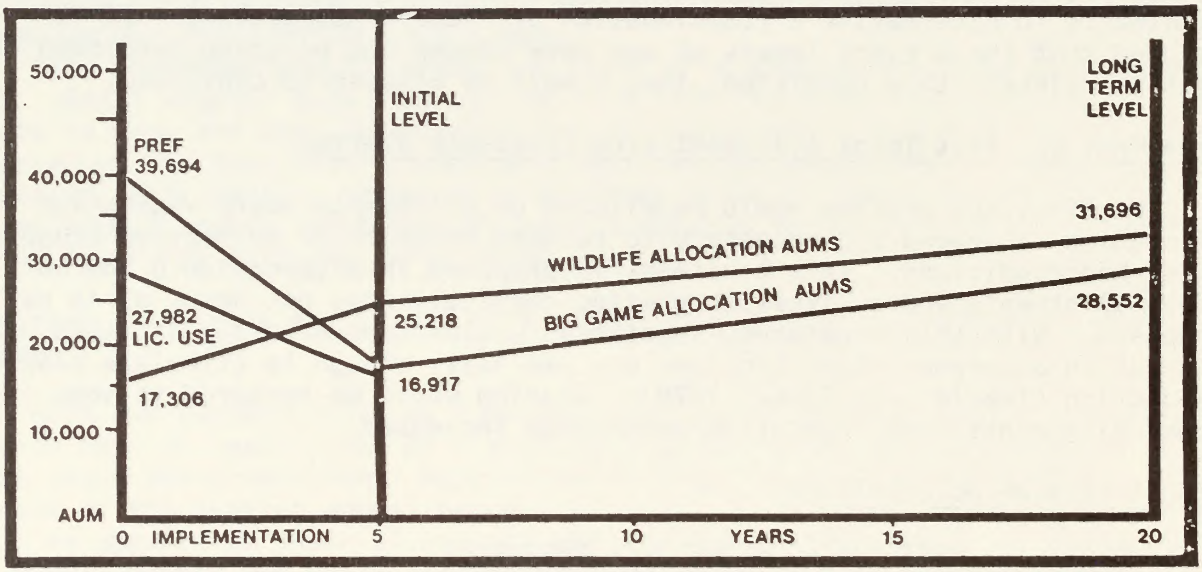
1. The level of use would change as listed below. (See also Appendix II-1, table A for allocation by allotment, table 2-1, and figure 2-1.)

   a. The initial livestock allocation would be 16,917 AUMs, a 57-percent reduction from the grazing preference of 39,694 AUMs, and a 40-percent reduction from the average licensed (current) use of 27,982 AUMs.

b. The proposed long-term livestock allocation would be 28,552 AUMs, a 2-percent increase above the current licensed use of 27,982 AUMs.

c. Big game would be initially allocated 25,218 AUMs, a 46-percent increase from the current level of 17,306 AUMs. This allocation would be divided as follows: deer, 22,619 AUMs; antelope, 238 AUMs; and elk, 2,361 AUMs.

d. The proposed long-term big game allocations would be 31,696 AUMs, divided as follows: deer, 26,774 AUMs; antelope, 492 AUMs; and elk, 4,430 AUMs.



SOURCE APPENDIX I-1 AND II-1

Figure 2-1

PROPOSED LEVEL OF USE TO OPTIMIZE NON LIVESTOCK RESOURCES

2. Forty-eight allotments would be combined into 17 allotments, while 42 allotments would retain their present boundaries. Appendix I-1, table B shows the allotment combinations.

3. Grazing treatments would be implemented as follows.

a. Spring rest, treatment 1, would be implemented on three allotments (10,360 acres) to improve forage production.

b. Spring rest 1 out of 4 years, treatment 2, would be implemented on 20 allotments (294,782 acres, 59 percent of the planning area) to improve existing plant vigor and production. Three other allotments initially excluded from livestock grazing, treatment 6, would be added to this treatment in the long term for a total acreage of 347,909 acres.

c. Spring livestock grazing, treatment 3, would be limited on the North Sanpitch Allotment (599 acres) to 25 percent of the current annual production of key plant species to improve condition and trend.

d. Initially, livestock grazing only in the spring to favor browse production, treatment 4, would be allowed to reduce vegetation competition between grass and browse on six allotments (20,643 acres) containing crucial deer wintering areas. Two additional allotments initially excluded from livestock grazing, treatment 6, would be added to this treatment in the long term for a total of 28,645 acres.

e. Present management, treatment 5, would continue on 15 allotments (94,512 acres) in good range condition to maintain the existing condition.

f. No livestock grazing, treatment 6, would be allowed on 14 allotments (79,076 acres) initially, but would return on five allotments in the long term. A total of nine allotments (17,947 acres) would continue to be excluded from livestock grazing in the long term.

4. Proposed range developments are outlined below. (See also table 2-2 and Appendix II-1, table A.) Total costs would be approximately $354,000.

a. Vegetation modifications to provide increases in livestock and wildlife forage would be implemented on 15,900 acres.

b. Water developments to allow better distribution of livestock and wildlife would provide water at 16 sites currently having insufficient water.

c. Thirty-five miles of fencing would be installed along streams in cattle allotments to protect riparian vegetation. This would exclude cattle grazing from 20 miles of stream (242 acres).

d. Three miles of fence would be installed to protect proposed transplant sites for Utah prairie dogs.

5. Introduce native cutthroat trout to Beaver Creek and Utah prairie dogs to sites on Plateau, Gypsum, and New Otter Creek Allotments.

ALTERNATIVE B: OPTIMIZE LIVESTOCK GRAZING

This alternative would allow livestock priority for allocation of vegetation up to that amount available from the current range survey. Range developments and grazing treatments would improve the vegetation resource and allow livestock and wildlife use to increase. Special areas such as riparian zones would be managed to increase livestock production. Vegetation that could not be made available for livestock would be allocated to other uses. Big game

use would be reduced and/or stabilized to eliminate any use conflicts with livestock grazing. All ranges would be monitored and levels of livestock use regulated to allow improvement to fair or good condition in the long term.

The following are specific actions for this alternative.

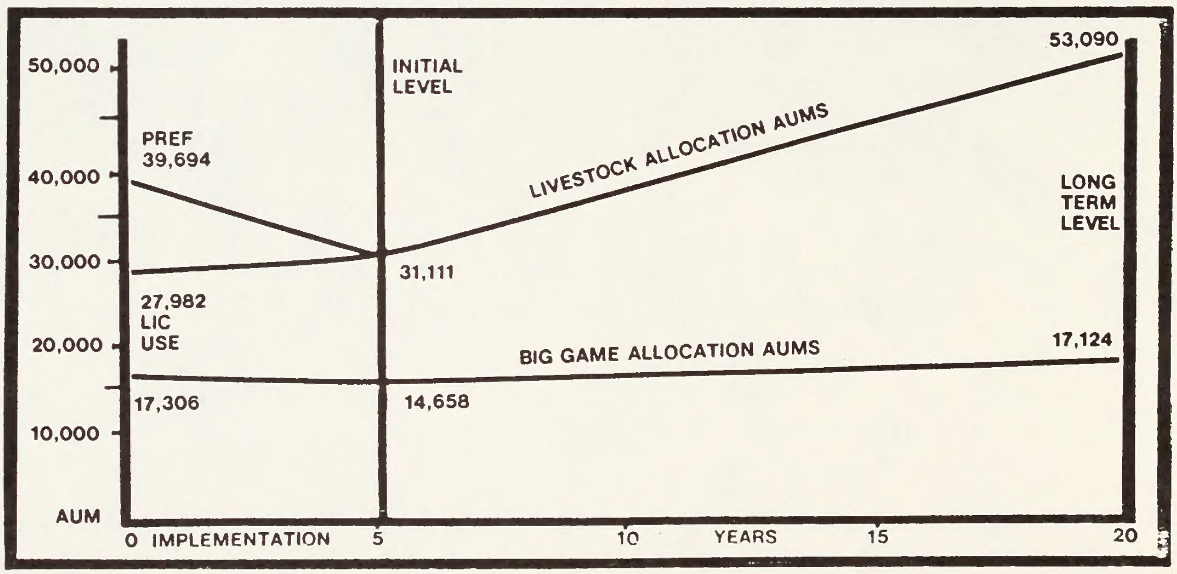
1. The level of use would change as listed below. (See also Appendix II-1, table B for allocation by allotment, table 2-2, and figure 2-2.)

   a. The initial livestock allocation would be 31,111 AUMs, a 22-percent reduction from the grazing preference of 39,694 AUMs, and an 11-percent increase from the average licensed (current) use of 27,982 AUMs.

   b. Proposed long-term livestock allocation would be 53,090 AUMs, an 89-percent increase above current licensed use.

   c. Big game would be initially allocated 14,658 AUMs, a 15-percent decrease from the current level of 17,306 AUMs. This allocation would be divided as follows: deer, 12,874 AUMs; antelope, 120 AUMs; and elk, 1,664 AUMs. (This would require deer and elk reduction programs.)

   d. Proposed long-term big game allocations would be 17,124 AUMs, divided as follows: deer, 14,999 AUMs; antelope, 127 AUMs; and elk, 1,998 AUMs.



SOURCE APPENDIX I-1 AND II-1

Figure 2-2

PROPOSED LEVEL OF USE TO OPTIMIZE LIVESTOCK GRAZING

2. Forty-eight allotments would be combined into 17 allotments, while 42 allotments would retain their present boundaries. Appendix I-1, table B shows the allotment combinations.

3. Grazing treatments would be implemented as follows.

   a. Spring rest, treatment 1, would be implemented on five allotments (18,589 acres) to improve forage production.

   b. Spring rest 1 out of 4 years, treatment 2, would be implemented on 25 allotments (373,805 acres, 75 percent of the planning area) to improve existing plant vigor and production.

   c. Spring livestock grazing, treatment 3, would be limited on the North Sanpitch Allotment (599 acres) to 25 percent of the current annual production of key plant species to improve condition and trend.

   d. Livestock grazing only in the spring to favor browse production, treatment 4, would be allowed to reduce vegetation competition between grass and browse on eight allotments (20,762 acres) containing crucial deer wintering areas.

   e. Spring grazing, along with other seasons of use, treatment 5, would continue on 20 allotments (86,217 acres) to maintain the existing fair or good condition.

4. Proposed range developments are outlined below. (See also table 2-2 and Appendix II-1, table B.) Total costs would be approximately $1,080,500.

   a. Vegetation modifications to provide increases in livestock and wildlife forage would be implemented on 38,475 acres.

   b. Water developments to allow better distribution of livestock and wildlife would provide water at 114 sites currently having insufficient water.

   c. Stock trails (3.5 miles) would improve access to lightly used areas on three allotments.

   d. Fencing (127.5 miles) would be installed on 16 allotments to control livestock movement.

   e. Exclosures would be installed on four allotments to examine the effects of different grazing treatments, levels of use, and kinds of animals grazing.

ALTERNATIVE C: RANGELAND MANAGEMENT RECOMMENDATION

This alternative is one of the environmentally preferred alternatives. The needs of each resource were balanced with the needs of a competing resource (see table 1-2). Livestock and wildlife were both considered, with priority given to one or the other on an allotment-by-allotment basis.

Utilization would not exceed 50 percent of the annual growth of key plant species. This would provide for the physiological needs of plants and maintain or improve watershed or soil surface conditions.

The following are specific actions for this alternative.

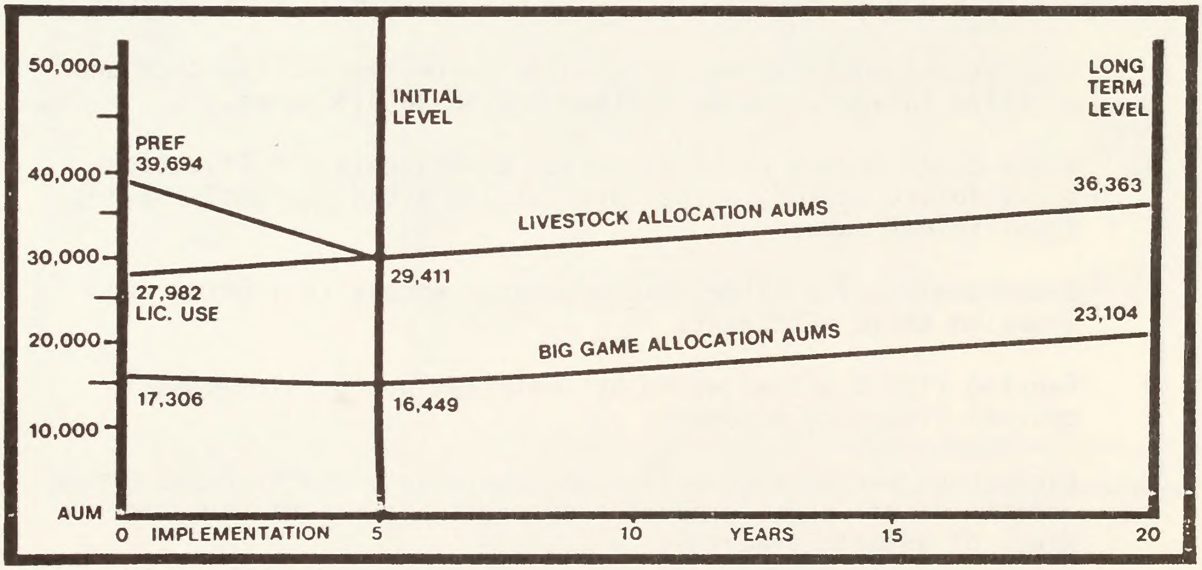
1. The level of use would change as listed below. (See also Appendix II-1, table C for allocation by allotment, table 2-2, and figure 2-3.)

   a. The initial livestock allocation would be 29,411 AUMs, a 26-percent reduction from the grazing preference of 39,694 AUMs, and a 5-percent increase from the average licensed (current) use of 27,982 AUMs.

   b. The proposed long-term livestock allocation would be 36,363 AUMs, a 30-percent increase from the present licensed use.

   c. Big game would be initially allocated 16,449 AUMs, a 5-percent decrease from the current ~~level~~ of 17,306 AUMs. This allocation would be divided as follows: deer, 14,622 AUMs; antelope, 120 AUMs; and elk, 1,707 AUMs. (This would require a deer reduction program.)

   d. Proposed long-term big game allocations would be 23,104 AUMs, divided as follows: deer, 20,656 AUMs; antelope, 199 AUMs; and elk, 2,249 AUMs.



SOURCE APPENDIX I-1 AND II-1

Figure 2-3

PROPOSED LEVEL OF USE FOR THE RANGELAND MANAGEMENT RECOMMENDATION

2. Forty-eight allotments would be combined into 17 allotments, while 42 allotments would retain their present boundaries. Appendix I-1, table B shows the allotment combinations.

3. Grazing treatments would be implemented as follows.

   a. Spring rest, treatment 1, would be implemented on five allotments (16,563 acres) to improve forage production.

   b. Spring rest 1 out of 4 years, treatment 2, would be implemented on 26 allotments (374,405 acres, 75 percent of the planning area) to improve existing plant vigor and production.

   c. Spring livestock grazing, treatment 3, would be limited on the North Sanpitch Allotment (599 acres) to 25 percent of the current annual production of key plant species to improve condition and trend.

   d. Livestock grazing only in the spring to favor browse production, treatment 4, would be allowed to reduce vegetation competition between grass and browse on nine allotments (21,526 acres) containing crucial deer wintering areas.

   e. Spring grazing, along with other seasons of use, treatment 5, would continue on 18 allotments (86,879 acres) to maintain the existing condition.

4. Proposed range developments are outlined below. (See also table 2-2 and Appendix II-1, table C.) Total costs would be approximately $1,310,350.

   a. Vegetation modifications to provide increases in livestock and wildlife forage would be implemented on 40,270 acres.

   b. Water developments to allow better distribution of livestock and wildlife would provide water at 122 sites currently having insufficient water.

   c. Stock trails (4.25 miles) would improve access to lightly used areas on three allotments.

   d. Fencing (116 miles) would be installed on 16 allotments to control livestock movement. (Six miles would exclude cattle grazing on two streams. Two miles would exclude livestock on two Utah prairie dog transplant sites and one existing site.)

   e. Exclosures would be installed on four allotments to examine the effects of different grazing treatments, levels of use, and kinds of animals grazing.

5. Introduce Utah prairie dogs to sites in Plateau and New Otter Creek Allotments.

ALTERNATIVE D: ELIMINATE LIVESTOCK GRAZING

This alternative would exclude livestock grazing use on public lands. Private landowners would be required to control their animals and to allow no trespass on public lands. While no fencing would be proposed by BLM, it is assumed that many private landowners would fence their land to control their livestock and allow continued use of private and State lands. Should all private owners fence their lands, up to 1,200 miles of new fence would be required. Total fence installation costs to the livestock operators would be approximately $2,760,000. Yearly maintenance expenditures would be between 5 and 10 percent of that amount. BLM would have no control over the type of fences built. Available forage would be allocated to other resource uses, and studies would focus on range trend only.

All usable vegetation would be allocated to deer, antelope, and elk under this alternative. Livestock would not be used to complement or balance the use of vegetation.

All vegetation not allocated to big game use would be held in reserve. Big game numbers would be monitored and reductions recommended through the Utah Board of Big Game Control should overutilization occur.

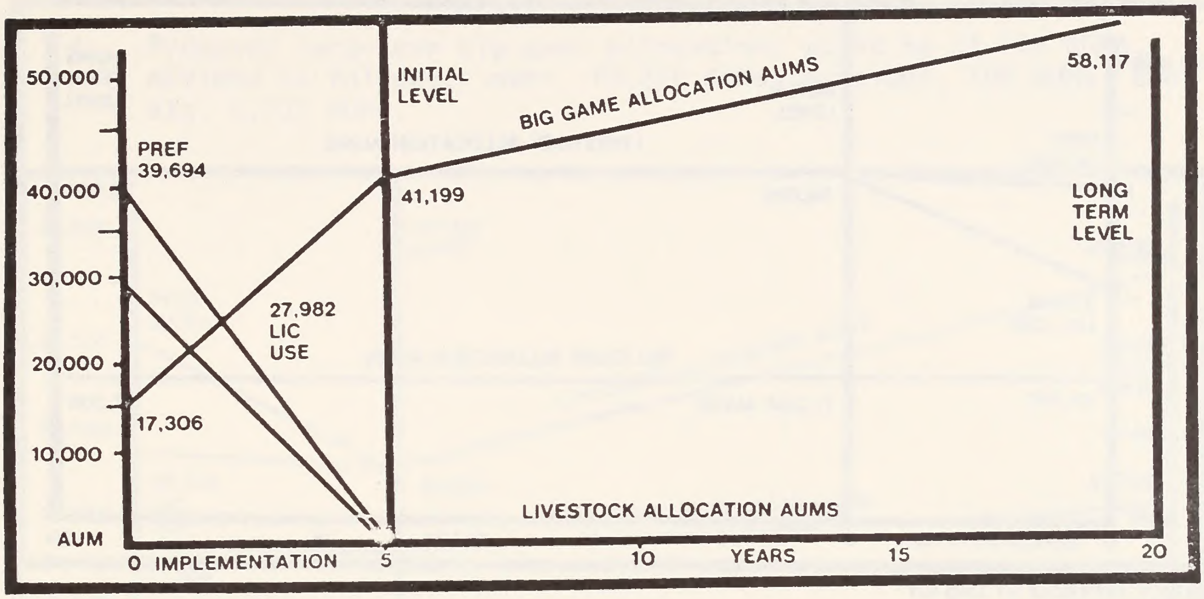
The following are specific actions for this alternative.

1. The level of use would change as listed below. (See also Appendix II-1, table D for allocation by allotment, table 2-2, and figure 2-4.)

   a. The livestock allocation would be eliminated.

   b. Big game would be allocated 41,199 AUMs, 138 percent more than the current level of 17,306 AUMs. This allocation would be divided as follows: deer, 33,151 AUMs; antelope, 921 AUMs; and elk, 7,127 AUMs.

   c. Proposed long-term big game allocations would be 58,117 AUMs, divided as follows: deer, 43,904 AUMs; antelope, 1,367 AUMs; and elk, 12,846 AUMs.



SOURCE APPENDIX I-1 AND II-1

Figure 2-4
PROPOSED LEVEL OF USE FOR THE ELIMINATION OF LIVESTOCK GRAZING

2. Vegetation modifications to provide increases in wildlife forage would be implemented on 6,850 acres. (See also table 2-2 and Appendix II-1, table D.) Total costs would be approximately $24,500.

ALTERNATIVE E: CONTINUATION OF PRESENT MANAGEMENT

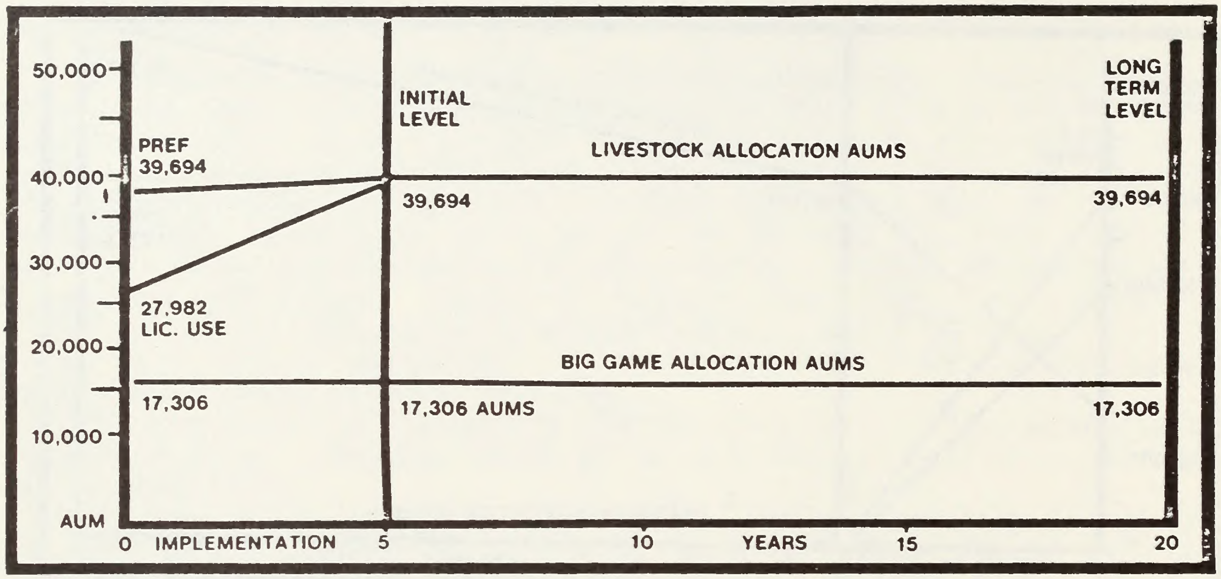
Under this alternative, present management practices would continue. Grazing permits would continue to set a period of grazing, kinds of livestock allowed to graze, and the numbers allowed to graze.

The preference numbers are analyzed rather than the current licensed use because permittees have the option to activate that number, and some have already done so. As an allotment changed hands, it is probable that the new operators would activate the preference level. This analysis allows for that worst case situation. The present actual use and trend studies would continue. No range developments would be proposed.

The following are specific actions for this alternative. The level of use would change as listed below. (See also Appendix II-1, table E for allocation by allotment, table 2-2, and figure 2-5.)

1. The livestock allocation would be 39,694 AUMs, a 42-percent increase from the average licensed (current) use of 27,982 AUMs.

2. Big game would be allocated 17,306 AUMs. This allocation would be divided as follows: deer, 15,460 AUMs; antelope, 120 AUMs; and elk, 1,726 AUMs.



SOURCE APPENDIX I-1 AND II-1

Figure 2-5

THE PROPOSED LEVEL OF USE FOR THE CONTINUATION OF PRESENT MANAGEMENT

ALTERNATIVE F: ADJUST SPRING LIVESTOCK USE

The purpose of this alternative is to manage rangelands to improve range condition and trend. This alternative requires adjustment of spring use by livestock on allotments where range condition is poor or fair and trend is declining or static. Use by livestock would be limited to 25 percent of the spring growth of key plant species. Priority for implementation is for allotments where condition is poor and/or trend is declining. The rationale and guidelines for the development of this alternative appear in Appendix II-5.

Livestock grazing would be eliminated on six allotments in the initial phase, but would be returned in the long term.

The following are specific actions for this alternative.

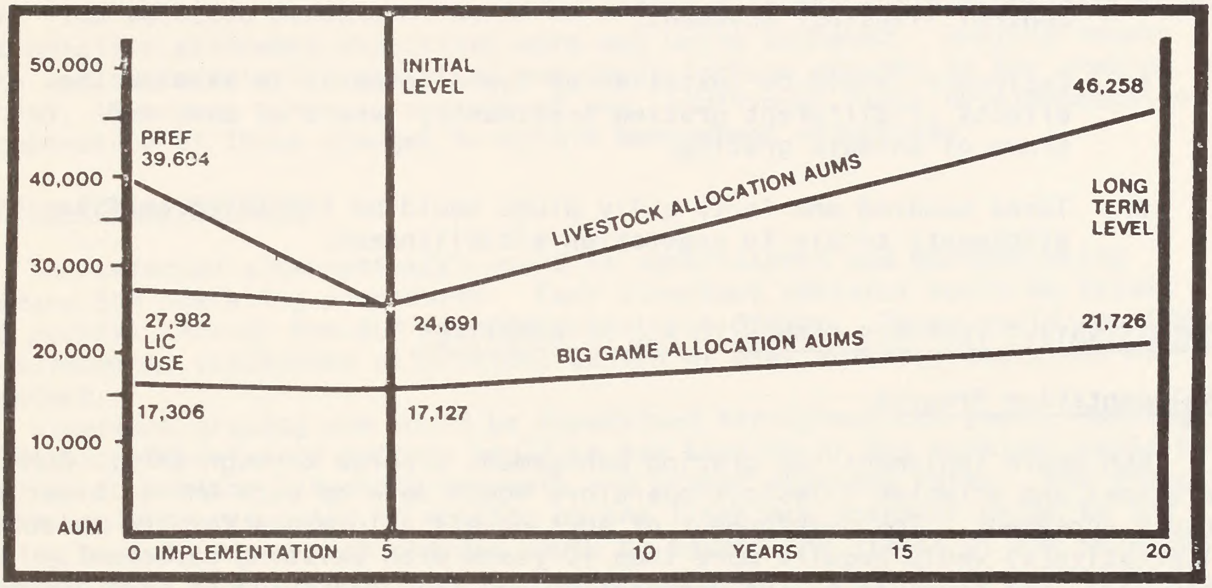
1. The level of use would change as listed below. (See also Appendix II-1, table F for allocation by allotment, table 2-2, and figure 2-6.)

   a. The initial livestock allocation would be 24,691 AUMs, a 38-percent reduction from the grazing preference of 39,694 AUMs, and a 12-percent decrease from the average licensed (current) use of 27,982 AUMs.

   b. The proposed long-term livestock allocation would be 46,258 AUMs, a 65-percent increase from the licensed use.

   c. Big game would be initially allocated 17,127 AUMs, a 1-percent decrease from the current level of 17,306 AUMs. This allocation would be divided as follows: deer, 15,296 AUMs; antelope, 120 AUMs; and elk, 1,711 AUMs. (This would require a deer reduction program.)

d. Proposed long-term big game allocations would be 21,726 AUMs, divided as follows: deer, 19,290 AUMs; antelope, 199 AUMs; and elk, 2,237 AUMs.



SOURCE APPENDIX I-1 AND II-1

Figure 2-6

PROPOSED ALLOCATION ADJUSTMENT OF SPRING LIVESTOCK USE

2. Grazing treatments would be implemented as follows.

a. Spring rest, treatment 1, would be implemented on 11 allotments (38,970 acres) to improve forage production.

b. Spring livestock grazing, treatment 3, would be limited on 73 allotments (447,678 acres) to 25 percent of the current annual production of key plant species to improve condition and trend initially. In the long term, six allotments initially under treatment 6 would be added to the treatment for a total of 461,002 acres.

c. No livestock grazing, treatment 6, would occur on six allotments (13,324 acres) in the initial allocation. These allotments would be managed under treatment 3 in the long term.

3. Proposed range developments are outlined below. (See also table 2-2 and Appendix II-1, table B.) Total costs would be approximately $1,453,500.

a. Vegetation modifications to provide increases in livestock and wildlife forage would be implemented on 27,610 acres.

b. Water developments to allow better distribution of livestock and wildlife would provide water at 49 sites currently having insufficient water.

c. Stock trails (3.5 miles) would improve access to lightly used areas on three allotments.

d. Fencing (71 miles) would be installed on 12 allotments to control livestock movement.

e. Exclosures would be installed on two allotments to examine the effects of different grazing treatments, levels of use, and kinds of animals grazing.

f. Three hundred and forty gully plugs would be installed on five allotments to aid in vegetation establishment.

ADMINISTRATIVE FEATURES COMMON TO ALL ALTERNATIVES

Implementation Program

BLM would implement the grazing management program through AMPs. BLM personnel and affected livestock operators would develop each AMP in order to ensure agreement. The development of AMPs on all allotments for the selected alternative(s) would require more than 10 years with existing personnel. Therefore, the schedule of the preparation and implementation of AMPs assumes the addition of four range conservationists and one wildlife biologist. This would ensure that AMPs for 20 allotments would be implemented each year and all AMPs would be fully implemented by the fifth year. The priority for the implementation would be to provide relief through development of AMPs and associated range developments first to those allotments that require the highest livestock grazing reduction; second, to those allotments where present livestock grazing levels could be maintained; and third, to those allotments where livestock grazing levels could be increased. Appendix II-6 lists the sequence in which implementation would occur for each alternative.

Livestock grazing levels and systems would be specified in the individual AMPs. Each AMP would be implemented by the District Manager as it was completed. If BLM personnel and livestock operators failed to reach an agreement, an AMP that provided for the protection of the resource would be implemented by decision of the District Manager. The livestock operator would, however, have the right to appeal any such decision. Included in the decision would be an identification of both the BLM and range user's responsibilities for development and maintenance of range facilities and monitoring.

Details of the selected alternative(s) would be further refined and specifically matched to resource conditions during preparation of AMPs. Proposed developments could vary from those described at this stage of planning.

Monitoring Program

After implementation of the selected alternative or combination of alternatives, all allotments would be monitored to determine that management objectives were met. The monitoring program would include an evaluation at the conclusion of grazing treatments and at the end of each grazing cycle (3 to 4 years) for any changes in plant composition, ground cover, and forage condition. Four primary studies are basic to the range use evaluation: (1) actual grazing use; (2) vegetation utilization; (3) range condition and trend; and (4) climate analyses (BLM Manual Section 4413.3). In addition, wildlife habitat, riparian

vegetation, aquatic habitat utilization and trend, and watershed condition would be evaluated.

Data from these studies would be evaluated to determine management effectiveness and to assist in making necessary adjustments, including changes in the level of use which would lead to the long-term allocation by the twentieth year. The selected management would be modified if the evaluations determined that specific allotment objectives were not being achieved. Grazing treatments and administrative modifications could include changes in the grazing systems, livestock numbers, seasons of use, additional range developments, or a combination of these changes to attain management objectives.

Grazing Administration

The selected alternative(s) would be administered and managed using standard BLM operating procedures. Each livestock operator would be issued term permits through the BLM Richfield District Office. These would specify the allotment, vegetation allocation, season of use, numbers, and kinds of livestock.

Livestock grazing use would be supervised throughout the year. Marking of livestock (preferred methods would be ear tagging or dye marking) could be required to monitor livestock movement and proper stocking rates. Any changes in use would be requested in writing by the livestock operator prior to the grazing period, since such changes could be beyond the limits of the selected alternative if they were inconsistent with management objectives. Grazing use outside the limits of the selected alternative(s) and without prior authorization would be considered trespass. Should trespass occur, BLM would take action to ensure it was eliminated and that payment was made for vegetation consumed.

BLM would also make adjustments in the range management program during drought or other emergencies. Such adjustments would be designed to accomplish grazing management objectives. Range condition, competition with wildlife, amount of available forage and water, and time of year would be considered in any decision to move livestock. The level of key plant species utilization by livestock would fall into one of the following categories:

1. Alternative E (Continue Present Management). Utilization would continue at present levels, in some cases as high as 60 to 80 percent of key plant species.

2. Alternative F (Adjust Spring Livestock Use), and in allotments with grazing treatment 3. Spring utilization (April, May, and June) would be held to 25 percent of the key plant species.

3. In all other alternatives and in areas not designated otherwise, annual utilization would be limited to 50 percent of the key plant species.

Vegetation utilization studies would be used to determine when the desired use of vegetation had occurred. When the desired level of use had been reached, livestock would be removed from the allotment or pasture for the remainder of the scheduled season. The action described in the Monitoring section of this chapter would be used to adjust permitted grazing for following years.

Administrative adjustments could be made to:

1. Authorize the movement of livestock from one pasture to another ahead of schedule if forage were lacking in the first pasture and available in the second.

2. Hold livestock on an allotment or pasture longer than scheduled if utilization had not reached 50 percent.

3. Reduce livestock numbers if forage production were lacking during any one year or growing season.

4. Increase livestock numbers temporarily if there were an unexpected abundance of forage production during a particular year.

5. Increase or decrease livestock numbers temporarily to achieve a predetermined degree of utilization. (For example, if achieving a degree of hedging on browse species were desirable to improve wildlife habitat, a temporary increase in livestock numbers might be warranted.)

6. Adjust livestock use to hold annual utilization of key plant species to 50 percent. Livestock use may be increased, decreased, or eliminated from an allotment for the purpose of controlling utilization of key plant species.

Standard Design, Construction, and Operation Features

The following protective measures would be required as standard design, construction, or operation procedures. These measures would be required to protect resource values and limit adverse impacts associated with the proposed grazing management program.

1. No permanent trails or roads would be constructed to project sites. Existing access would be used. Soil disturbance at all projects would be held to a minimum.

2. No vegetation clearing of the project sites would be allowed except on sites requiring excavation.

3. Disturbed areas where insufficient vegetation occurred would be seeded in order to provide ground cover and minimize losses of soil. Seeding would generally be accomplished in the fall with plant species adaptable to the specific site. Probable species would include wheatgrass, brome grass, alfalfa, bitterbrush, four-winged saltbush, and small burnet.

4. Examination of physical site factors such as slope, exposure, soil depth, seeding suitability, and erosion hazard would be criteria used in selecting sites for vegetation modification projects.

5. A survey of potential habitat for threatened or endangered species (including any species under consideration for formal designation as threatened or endangered) would be made prior to taking any action that could affect these species. Should BLM determine there might be an effect on listed species, formal consultation with the U.S. Fish and Wildlife Service would be initiated.

6. Archaeological surveys and clearance would be required for all project sites (as specified in BLM Manual 8111.14) prior to new construction. As stipulated in the programmatic memorandum of agreement (BLM Advisory Council on Historic Preservation et al.), the BLM has entered into a memorandum of understanding with the Utah State Historic Preservation Officer regarding protection of cultural resources (Appendix II-7).

7. An environmental assessment (EA) would be required prior to ground-disturbing actions if significant modification of actions described in the EIS occurred or if resource information became available that indicated a need for further examination. The EA would be written to conform with BLM policy, would be site specific, and would supplement this EIS.

8. Those allotments on which vegetation modification occurred would not be grazed by livestock until vegetation became well established and capable of supporting livestock grazing. A minimum of two complete growing seasons with no livestock grazing would be required for burned or sprayed areas and 2 full years of rest would be required for areas receiving ground-disturbing projects. This treatment would ensure establishment of desirable vegetation.

9. Each year water developments would be periodically inspected to ensure that they remained in usable condition. Preventive maintenance would be performed as needed. Cooperative agreements with range users would be solicited by BLM for range developments. Agreements would outline specific project maintenance responsibilities.

10. When possible, water for wildlife would be maintained throughout the year at established watering facilities.

11. The appropriate Federal officials would be notified if paleontological remains were encountered during construction activities. Recovery, protection, and preservation measures would then be implemented, as necessary, to mitigate adverse impacts.

12. Riparian areas proposed for protection to maintain wildlife habitat, aesthetics, and water quality would be fenced. Fencing of riparian areas would be completed within the 5-year period established for completion of range improvements.

13. Prior to the development of projects, provisions of the Memorandum of Understanding of April 1, 1979 between the BLM,

Forest Service (FS), UDWR, and Soil Conservation Service (SCS) and the master Memorandum of Understanding between BLM and UDWR of June 1979 would be met. These memoranda provide for coordination in the development and establishment of guidelines for buffer zones for water, sagegrouse strutting grounds, and other developments. The projects would be soundly based and carefully planned to meet coordinated efforts.

Design restrictions specifically applicable to proposed range developments are summarized in table 2-4. The criteria and methodology used to select the type of modification is presented in the Range Development section at the beginning of this chapter.

ALTERNATIVE ENVIRONMENTAL CONSEQUENCE COMPARISON

Table 2-5 shows a comparison of the environmental consequences of all alternatives.

TABLE 2-4

Summary of Project Design Restrictions

Pinyon-Juniper and Sagebrush Control by Chaining Followed by Seeding

1. The patterns of the vegetation modification would be designed to blend into the landscape to maintain the natural appearance of the area.

2. Areas within 200 feet of roads would not be chained.

3. Steep drainages (over 30-percent slope) would not be chained.

4. The need for and proper dimensions of buffer zones would be jointly agreed to by BLM and UDWR prior to on-the-ground development of projects. Buffer zones would be provided, where necessary, to allow normal riparian ecosystem functioning and protection of sagegrouse areas.

5. Chained vegetation would be left in place. Permits would be given for salvage of trees for firewood and posts.

6. Seed from a mixture of plant species adapted to the specific site would be used for seeding.

Sagebrush Control by Spraying (2,4-D)

1. Prescribed spraying plans would be developed in accordance with BLM Manual 9220. Herbicide 2,4-D mixed with water at the rate of 1 lb. of acid equivalent per acre would be applied by airplane. Contamination to water would be avoided and proximity to agricultural lands would be identified.

2. Projects would not exceed State and Environmental Protection Agency (EPA) pollution standards. Application of chemicals would conform to EPA regulations and BLM requirements.

3. The patterns of the vegetation modification would be designed to blend into the landscape to maintain the natural appearance of the area.

4. Chemical spray would be applied only when winds are less than 5 miles per hour to control drift.

5. The need for and proper dimensions of buffer zones would be jointly (BLM and UDWR) agreed upon prior to on-the-ground development of projects. Buffer zones would be provided where determined to be necessary to allow normal riparian ecosystem functioning and protection of sagegrouse areas.

6. Sprayed vegetation would be left in place.

(continued)

TABLE 2-4 (continued)

Browse Planting

1. The patterns of the vegetation modification would be designed to blend into the landscape to maintain the natural appearance of the area.

2. Equipment used for scalping of seedbeds would work on a contour to avoid making tracks which would collect water and start gully erosion.

3. Seeding would be accomplished with a variety of browse and forb plants to establish a plant community desirable to both livestock and big game.

Plowing or Contour Furrowing and Seeding

1. The patterns of the vegetation modification would be designed to blend into the landscape to maintain the natural appearance of the area.

2. Seeding would be accomplished with a mixture of seed which would provide a plant community desirable to livestock, big game, and other wildlife.

Burning

1. The prescribed burning plan would identify burning procedures, environmental conditions, controls, and coordination responsibilities.

2. Projects would not exceed State and EPA pollution standards.

3. Weather factors would be monitored for proper conditions prior to allowing burning.

4. Burning would be done only when ground moisture is sufficient to allow plant growth.

5. Burning would be scheduled to occur when most desirable plants are dormant.

Water Developments[a]

1. Actual work on springs and in streambeds would be done by hand, where possible. If machinery were needed in these areas, rubber-tired tractors would be utilized to reduce damage.

2. After construction of springhead boxes, troughs, pipelines, and well sites, the areas would be cleared and refuse removed.

3. Cuts, fills, and excavations would be dressed and blended with surroundings. Pipelines would be buried, where possible.

4. Original water sources would be protected, fenced if required, and an off-stream source provided near the site.

5. Size of storage tanks and troughs would be designed to accommodate expected needs of animals using each source.

(continued)

TABLE 2-4 (concluded)

Water Developments (continued)

6. Overflow would be discharged 50 feet from tank sites, wells would be cased to prevent cave-in, and well sites would be fenced.

7. Storage structures would be designed to provide water to wildlife. Drinking ramps would be installed, and tank or trough heights would not prohibit young animals from obtaining water.

8. Water developments would be located and designed within visual resource management guildelines.

9. Water troughs would be designed to provide small animal escape ramps. The lip of the water trough would not be higher than 2 feet above ground. If water flow from springs were sufficient, water would be maintained in all troughs between May 1 and October 30. Overflow discharge would be a minimum of 50 feet from the trough. Overflow areas would be fenced to exclude livestock from the area of discharge.

Fences

1. Off-road traffic occurring from construction vehicles would be held to a minimum.

2. Fenceposts would be colored to blend with surroundings except where visibility is required for safety.

3. Where fences would cross existing roads, either gates or cattleguards would be installed.

4. Gates would be installed along fencelines at regular intervals as specified in BLM Manual 1737.

5. Vegetation clearance would be held to a minimum.

6. In big game areas, fences would be designed to accommodate movement of big game per BLM 1737 Fencing Manual.

7. All structures would be in conformance with visual resource management guidelines.

8. Water access would be provided in riparian fenced areas.

Source: Planning Documents.

[a]Water developments include earthen reservoirs, spring developments, raintraps, water storage tanks, water pipelines, water troughs, and wells.

TABLE 2-5

Summary of Environmental Consequences

Resource and Category	Current or Existing Situation	Alternative A Optimize Non-Livestock Resources Initial	Alternative A Long Term	Alternative B Optimize Livestock Grazing Initial	Alternative B Long Term	Alternative C Rangeland Management Recommendation Initial	Alternative C Long Term	Alternative Eliminate Livestock Grazing Initial	Long Term	Alternative E Continuation of Present Management Initial	Alternative E Long Term	Alternative F Adjust Spring Livestock Use Initial	Alternative F Long Term
Vegetation													
Production (AUMs)	47,835	--	68,683	--	73,725	--	68,492	--	67,416	--	40,181	--	80,901
Good Range Condition (acres)	186,988	--	467,772	--	467,772	--	467,772	--	467,772	--	39,107	--	467,772
Fair Range Condition (acres)	280,784	--	32,200	--	32,200	--	32,200	--	32,200	--	179,787	--	32,200
Poor Range Condition (acres)	32,200	--	0	--	0	--	0	--	0	--	281,078	--	0
Improving Trend (acres)	17,696	--	[a]	--	[a]	--	[a]	--	[a]	--	0	--	[a]
Static Trend (acres)	438,270	--	[a]	--	[a]	--	[a]	--	[a]	--	320,185	--	[a]
Declining Trend (acres)	44,006	--	0	--	0	--	0	--	0	--	179,787	--	0
Riparian Vegetation Condition (acres)	36 Good 452 Poor	--	488 Improv.	--	36 Good 452 Poor	--	415 Poor 73 Improve	--	488 Improve	--	36 Good 452 Poor	--	36 Good 452 Poor
Soils													
Erosion (acres)	--	--	Reduced 347,909 No Change 152,063	--	Reduced 373,805 Slight Decrease 126,167	--	Reduced 373,805 Slight Decrease 126,167	--	Static in Good 186,988 Reduce 312,984	--	Static 69,996 Increase 429,996	--	Deteriorate 6,214 Static or Reduce 493,758
Water Resources													
Overland Flow			Decrease Slightly		Decrease		Decrease		Decrease		Increase		Decrease
Quality			Improve		Improve		Improve		Improve		Deteriorate		Improve
Animal Life													
Deer (ea.)	17,933	26,238	29,986	14,934	17,398	16,961	23,960	40,345	52,818	[b]	[c]	17,743	24,266
Antelope (ea.)	96	190	393	96	102	96	159	736	1,093	[b]	[c]	96	159
Elk (ea.)	656	897	1,683	632	739	648	855	2,708	4,881	[b]	[c]	650	850
Sagegrouse	--	--	Increase	--	Decrease	--	Decrease	--	Increase	Decrease	Decrease	Increase	Unknown
Prairie Dogs (colony)	1	1	4	1	1	1	3	1	Unknown	Unknown	Unknown	1	1
Fish	--	--	Increase	--	Decrease	--	Decrease	--	Increase	--	Decrease	Increase	Unknown
Livestock Grazing													
Changes in Level of Use (AUMs)[d]													
Small Sheep	136	-57	+1	+25	+94	+31	+37	-136	--	+61	--	-30	+63
Large Sheep	18,807	-7,169	+115	+2,244	+11,393	+953	+4,117	-18,807	--	+8,195	--	-1,781	+12,611
Small Cattle	3,209	-1,257	+256	+91	+3,590	+115	+1,475	-3,209	--	+172	--	-491	+2,075
Medium Cattle	1,506	-546	+185	+117	+2,040	+57	+833	-1,506	--	+1,186	--	-266	+1,596
Large Cattle	4,324	-2,036	+13	+652	+4,862	+273	+490	-4,324	--	+1,558	--	-723	+5,222
Changes in Season of Use (No. of Operations)	91	91	118	118	105	105	n/a	n/a	None	None	97	97	
No. of Allotments Consolidated	--	43	43	43	43	43	43	0	0	0	0	0	0
Recreation													
Recreation Use (Hunter Days)	20,485	29,591	32,932	16,955	18,793	19,134	26,922	45,588	62,664	[e]	[e]	19,965	25,234
Socioeconomics													
Operator Income (Percent Change)													
Small Sheep	$2,564	-18.2	0.0	+16.3	+75.8	+20.4	+27.0	-42.2	--	+41.9	--	-9.3	+42.9
Large Sheep	$30,447	-14.4	0.0	+6.4	+67.9	+4.8	+20.6	-37.6	--	+40.8	--	-1.1	+62.8
Small Cattle	$1,625	-47.0	-24.6	-2.0	-384.0	-8.9	-141.6	-127.8	--	-69.4	--	-9.5	-202.9
Medium Cattle	$7,785	-12.3	+8.3	-2.0	+83.2	+15.2	+32.2	-36.6	--	+43.9	--	-2.0	-61.2
Large Cattle	$17,493	-13.9	0.0	-3.2	+206.6	+6.0	+10.4	-29.5	--	+30.8	--	-1.9	+206.6

[a] Trend would be improving or static on 499,972 acres.

[b] Same as existing.

[c] Poor habitat would result in fewer than existing numbers.

[d] Long-term changes are from the initial level.

[e] Unquantifiable decrease in hunter days below 20,485.

CHAPTER 3
AFFECTED ENVIRONMENT

INTRODUCTION

This chapter describes the existing environment of the Mountain Valley Planning Area. Climate, air quality, and geology would not be changed by any of the proposed actions; however, a brief discussion is included to describe the setting for the area. This will be followed by a discussion of vegetation, soils, water resources, animal life, livestock grazing, recreation, socioeconomics, visual resources, and cultural resources which would be affected by the proposed alternatives.

No wild and free-roaming horses or burros are found in the planning area, nor are there any historic ranges inhabited by those animals on December 15, 1971 as specified in the Wild Horse and Burro Act. There are no lands in the planning area with wilderness values.

The Setting

The planning area has a typically semiarid intermountain climate. It is characterized by local changes in topography and elevation. The average elevation is 5,500 feet above mean sea level (range 4,600 to 9,000 feet), with physiographic variations occurring along slopes of the San Pitch Mountains, Sevier Plateau, and Pavant Range. Mean annual temperatures range from approximately 43° Farenheit (F) in the southern portion to 50° F in central and northern areas.

Annual precipitation is approximately 10 inches in the valleys and increases to approximately 25 inches in mountain elevations. Average annual precipitation in the planning area is approximately 12 to 15 inches. Precipitation comes mostly in the form of snow and spring rains occurring November through March. The summer storms generally occur during July and August. They cover small areas and are usually of high intensity and short duration, depositing as much as 3 inches of rain.

Wind velocity is usually light to moderate, preventing smoke and haze accumulation. Ambient air quality is considered excellent. However, localized areas may experience periodic haziness from burning or ground disturbance (U.S. Department of Agriculture [USDA], Sevier River Report, 1969).

VEGETATION

The vegetation communities of the Mountain Valley Planning Area are typical of the middle latitude, dry climate regions of Utah. Sagebrush and pinyon-juniper communities occupy about 83 percent of the total 499,972 acres of public lands. The remaining 17 percent of the area is occupied by saltbush, greasewood, grass types (mostly seedings), mountain brush, and limited areas of conifer, aspen, and riparian. Ten major vegetation communities in the planning area are shown in figure 3-1 and listed in Appendix III-1. Winterfat, rabbitbrush and other shrubs are included under the desert shrub type.

Considerable variation exists within the major types of plant composition, vegetation density, production, and potential. This is due to differences in climatic and soil factors. However, aspect, slope, fire occurrence, and past land treatment and use have also caused much of the variation of the present vegetation situation. The estimated forage production (47,835

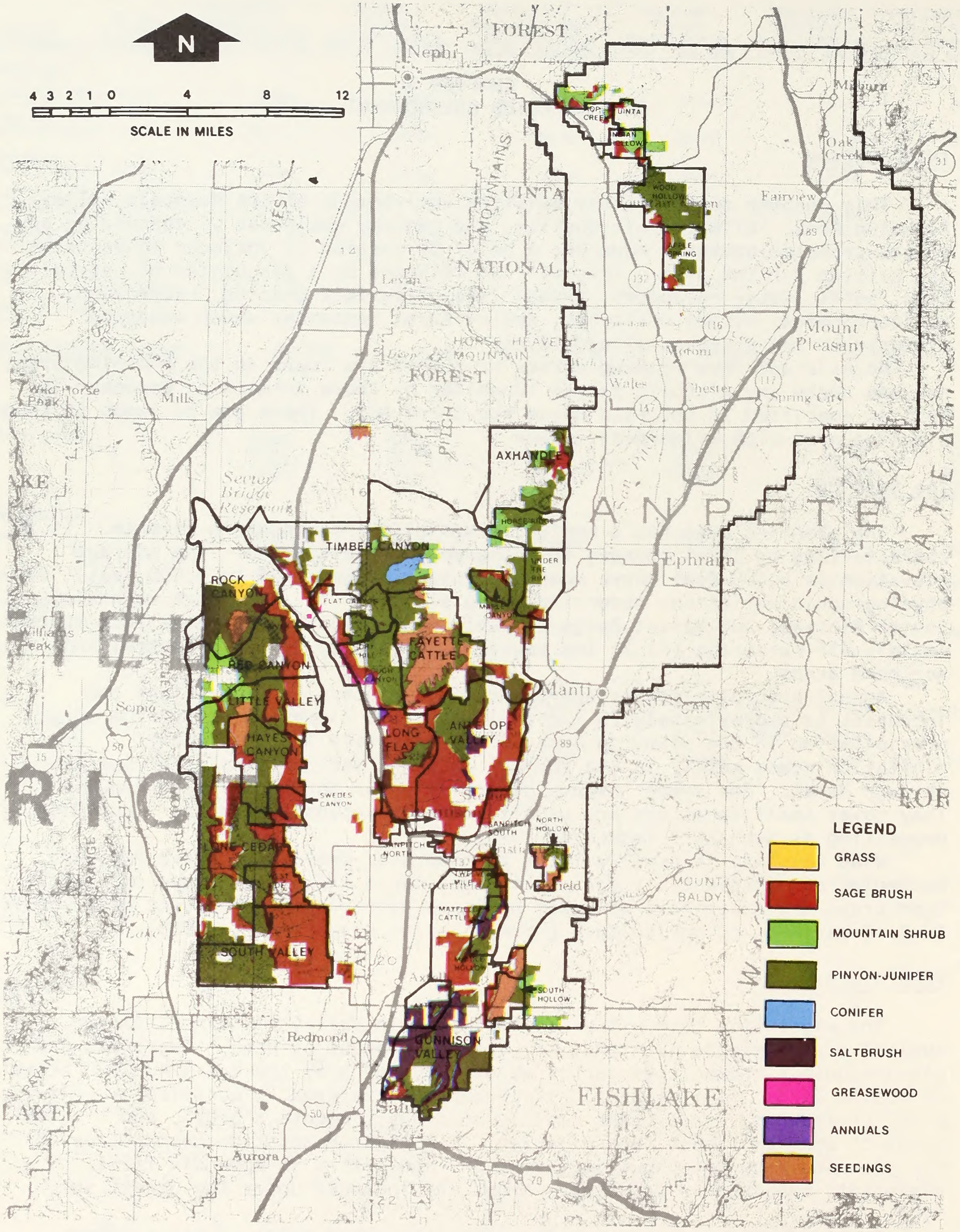


Figure 3-1

VEGETATION TYPES WITHIN THE PLANNING AREA

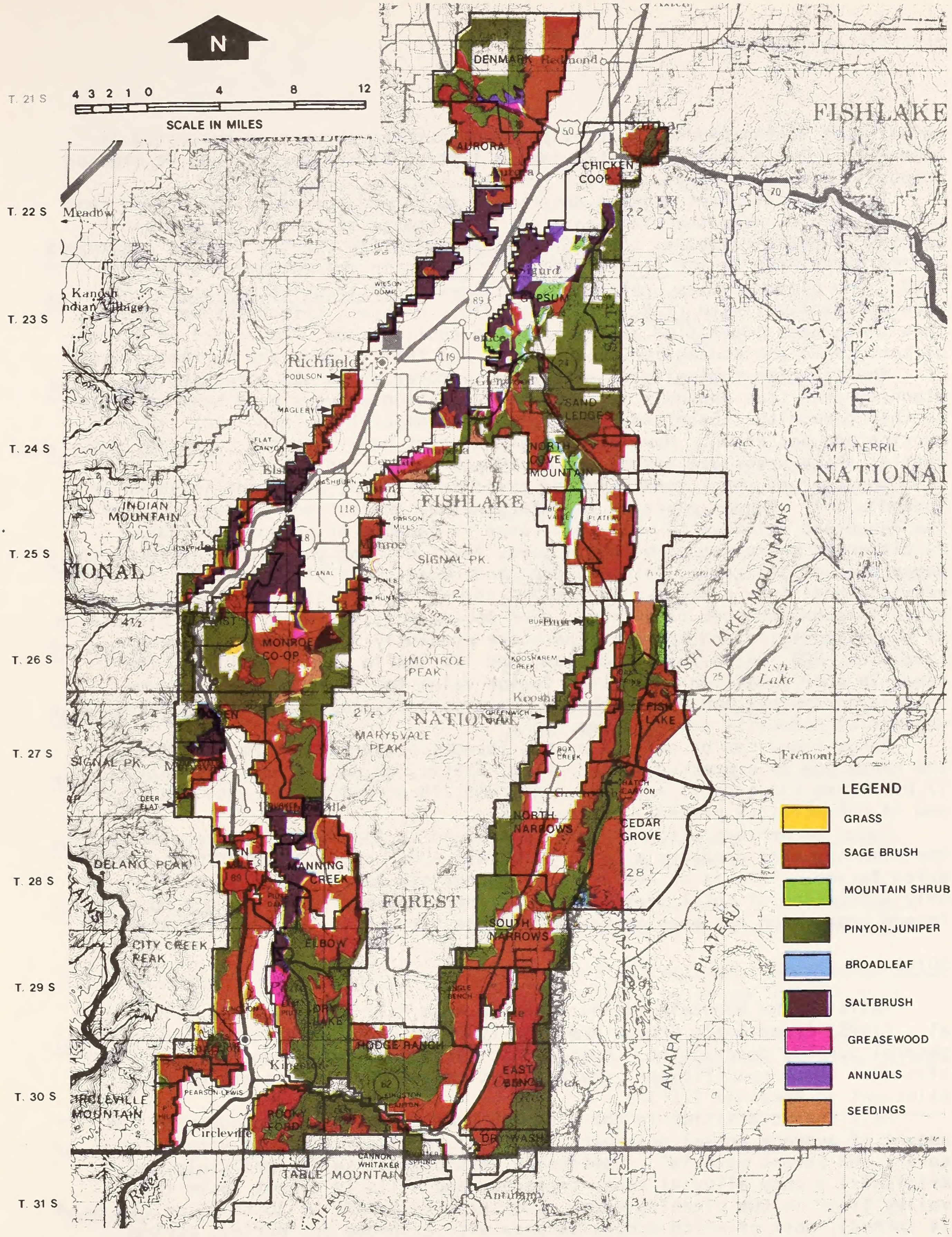


Figure 3-1 (continued)

VEGETATION TYPES WITHIN THE PLANNING AREA

animal unit months [AUMs]) is provided from current surveys as described in Appendix II-2. Appendix II-3 provides a listing of key species and vegetation composition by allotment.

There are 11 plant species determined to be endangered or threatened that occur within or near the planning area. The status of ten of these plant species is under review by the U.S. Fish and Wildlife Service with an updating due to be printed in the Federal Register (F.R.) in the spring or summer of 1980. One plant species, narrowleaf poisonvetch (*Astragalus perianus*), has been officially listed (F.R. April 26, 1978); however, this plant has not, at this time, been identified as occurring on public lands. Table 3-1 is a list of threatened and endangered (T&E) plants and their former and current status.

The riparian community is estimated to cover about 488 acres in the planning area (see Appendix III-1). No vegetation surveys have been completed in this community; therefore, the vegetation composition, condition, and production are not known. However, because of past heavy grazing, especially by cattle, these areas are assumed to be in poor condition.

The current range condition and trend in acres by allotment is shown in Appendix I-1. Range condition is determined by the current productivity of the rangeland relative to what that range is capable of producing. Range condition is expressed as being in good, fair, or poor condition, based on the percentage of desirable, intermediate, and undesirable plant species and soil erosion conditions present. Figure 3-2 shows pinyon-juniper and sagebrush range in good and poor condition. (See Appendix III-2 for a further discussion of range condition and trend.) There are presently 32,200 acres in poor condition, 280,784 in fair condition, and 186,988 in good condition. The range in poor condition has little forage value for livestock or big game. The pinyon-juniper and big sagebrush range probably represents the natural vegetation community on the sites.

Range trend can be defined as the changes occurring in the condition of the range and is expressed as improving, static, or declining. Presently, 17,696 acres (3 percent) are improving, 438,270 acres (88 percent) are static, and 44,006 acres (9 percent) are declining.

Based on surveys with methodologies given in Appendix II-2, vegetation in the planning area produces a total of 47,835 AUMs, or 38,268,000 lbs. of air dried forage. This is an average of 10 acres per AUM. Forage production is only a fraction of total vegetation or plant biomass production, and only forage production has been measured by range surveys in the planning area.

SOILS

Soils in the Mountain Valley Planning Area fall into eight of Wilson's et al., (1975) Broad Soils Groups and Land Types of Utah, which are meant as a general purpose description. Most groups consist of more than one soil association. (More specific soil characteristics and limitations are given by allotment in Appendix III-3.)

Soil characteristics in the planning area are chiefly a product of the amount of average annual precipitation (AAP) received, historic vegetation cover, and parent material. Dominantly dark-colored soils (Mollisols and Aridisols) occupy alluvial fans, terraces, and hills in a belt above the valley floor in the planning area. They receive an AAP of 30 to 35 cm (12 to 14 inches), most of which occurs as snow with extended dry periods during summer. Light-colored soils (Aridisols and Entisols) occupy the Sevier and San Pitch Valleys. They are usually dry with an AAP of 20 to 35 cm (8 to 14 inches).

TABLE 3-1

Threatened and Endangered Plants in the Mountain Valley Planning Area

Plant Name	Former and Current Status
Astragalus desereticus	(E)[a] F.R. 1975. "Possibly extinct." F.R. 1976, endangered. Recommended by Welsh as endangered in 1978.
Astragalus montii	(E) Recommended by Welsh as endangered in 1978.
Astragalus perianus	(T)[b] F.R. 1975. F.R. 1976, endangered. Officially listed as threatened in F.R. on April 26, 1978. Recommended as threatened by Welsh.
Cycladenia humilis var jonesii	(E) F.R. 1975, endangered. F.R. 1976, endangered. Recommended as endangered by Welsh in 1978.
Eriogonum ostlundii	(T) F.R. 1975, threatened. Recommended as threatened by Welsh in 1978.
Mentzelia argillosa	(T) Recommended as threatened by S. L. Welsh in 1978.
Najas flexilis var. caespitosa	(T) F.R. 1976, endangered. Recommended as threatened by Welsh in 1976.
Penstemon waruii	(T) F.R. 1975, threatened. Recommended as threatened by Welsh in 1978.
Phacelia utahensis	(T) F.R. 1975, threatened. Recommended as threatened by Welsh in 1975.
Silene petersonii var petersonii	(T) F.R. 1975, threatened. Recommended as threatened by Welsh in 1978.
Townsendia aprica	(E) F.R. 1975, endangered. F.R. 1976, endangered. Recommended as endangered by Welsh in 1978.

Source: Illustrated Manual of Proposed Endangered and Threatened Plants of Utah, S. L. Welsh, 1979.

[a]Endangered.

[b]Threatened.

HEAVY UTILIZATION ON BROWSE AND PINYON-JUNIPER

MODERATE UTILIZATION OF BROWSE
AND PINYON-JUNIPER TYPES

Figure 3-2

POOR BROWSE RANGE IN PINYON-JUNIPER TYPE

GOOD BROWSE RANGE IN PINYON-JUNIPER TYPE

Figure 3-2 (continued)

Similar dark and light colored soils (Mollisols, Aridisols, and Entisols) are found in Piute County with variations due to differences in elevation. In some valley areas, dominantly light-colored sodic-saline soils (Aridisols and Entisols) exist in valley bottoms and floodplains. These soils are very strongly alkaline, although they can be used for range and wildlife habitat. Miscellaneous land types of the Badlands-Rock Land Association are also found in the planning area.

Erosion Condition

Erosion conditions were identified using soil surface factors (SSF) determined by field observations of soil movement, surface litter, pedastalling, surface rock, rills, flow patterns, and gullying. This showed 3 percent (14,666 acres) of public lands in the planning area in stable erosion condition, 34 percent (172,126 acres) in slight erosion condition, 51 percent (256,042 acres) in moderate erosion condition, 11 percent (55,190 acres) in critical erosion condition, and less than 1 percent (1,948 acres) in severe erosion condition.

In the Phase I watershed inventory, the planning area was divided into 17 watershed areas. Factors from the Pacific Southwestern Interagency Committee's (PSIAC) Method (1968) were used to convert SSF condition classes to sediment yield. The sediment yields by watershed area are given in table 3-2.

Some of the current erosion is geologic erosion. It is due to the inherent nature of the soil parent material (texture or chemical properties), and not man's activities (Bentley et al., 1977).

WATER RESOURCES

General Description

The Mountain Valley Planning Area is located in the Great Basin hydrologic region and the Sevier River subbasin, except for portions of the Fishlake and Cedar Grove Allotments which drain into the Fremont River of the Colorado Plateau hydrologic region. Most public lands are in a belt between the valley bottom and the higher mountains.

Segments of the perennial streams (tributaries of the Sevier River) listed below are in the planning area. (These are also shown in figure 3-3.)

Piute County	Sevier County	Sanpete County
Cottonwood Creek	Praetor Cyn. Cr.	Axhandle Canyon Cr.
Beaver Creek	Salina Creek	Timber Canyon Cr.
City Creek	Lost Creek	Hell's Kitchen Cyn. Cr.
Otter Creek	Koosharem Creek	Willow Creek
Box Creek	Otter Creek	Cottonwood Creek
East Fork Sevier River	Burr Creek	San Pitch River
Pine Creek	Clear Creek	Ephraim Creek
Birch Creek	Water Creek	Pleasant Creek
Manning Creek		Twin Creek
Sevier River		Six Mile Creek
Deer Creek		Twelve Mile Creek
		Salt Creek

CHAPTER 3

AFFECTED ENVIRONMENT

TABLE 3-2

Watershed Sediment Yield

Watershed Area	BLM Administered Acres	Percentage in Severe and Critical Condition	(ac. ft./sq. mi./yr.) Sediment Yield[a]	Average Annual Sediment Yield (acre-feet)
Glenwood	34,017	12	0.94	50.2
Kingston	35,190	40	1.78	97.8
Marysvale	10,127	50	1.89	30.0
Aurora	10,002	--	1.72	27.0
Salina	4,168	70	1.98	12.9
Lost Creek	15,419	40	1.24	30.0
Monroe	5,501	70	2.09	18.0
Richfield	7,251	60	1.68	19.0
San Pitch	57,094	12	0.88	79.0
Valley Mountain	80,765	<1	0.59	75.0
Mayfield	24,075	18	0.88	33.0
Grass Valley	73,733	0	0.94	108.3
Manning Creek	18,855	11	0.73	21.5
Junction	21,271	0	0.77	25.6
Durkee	34,304	9	0.57	30.5
Plateau	6,084	0	0.20	1.9
Fountain Green	7,482	0	0.55	6.4
	54,634	No data	No data	No data
Total				666.1

Source: BLM planning documents, 1979.

[a]Sediment yield in PSIAC has been given the following ratings:

Ac. Ft./Sq. Mi./Yr.	Rating Class
> 3.0	Extreme/severe
1.0 - 3.0	Heavy/critical
0.5 - 1.0	Moderate/moderate
0.2 - 0.5	Slight/slight
< 0.2	Negligible/stable

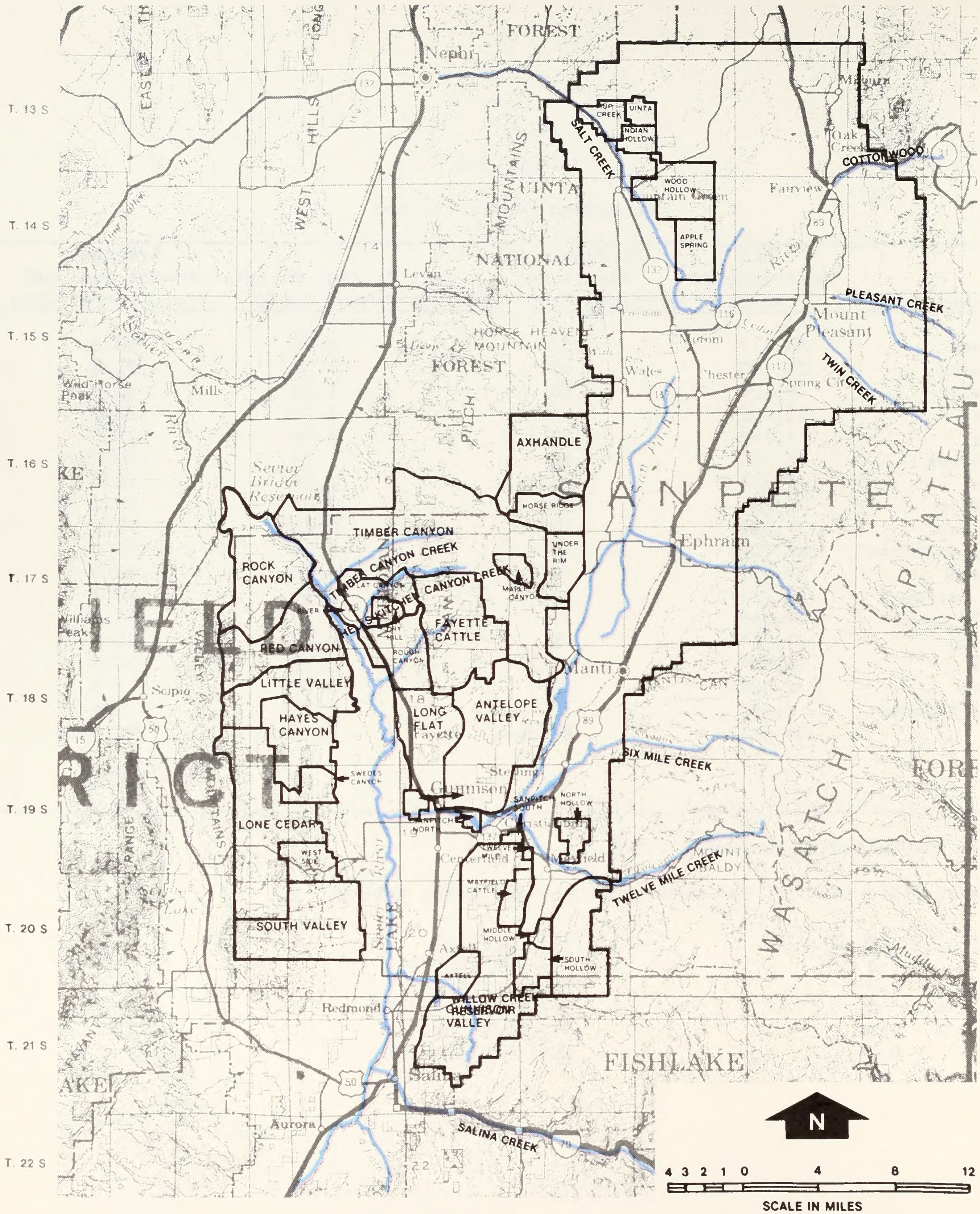


Figure 3-3

RESERVOIRS AND STREAMS WITHIN THE PLANNING AREA

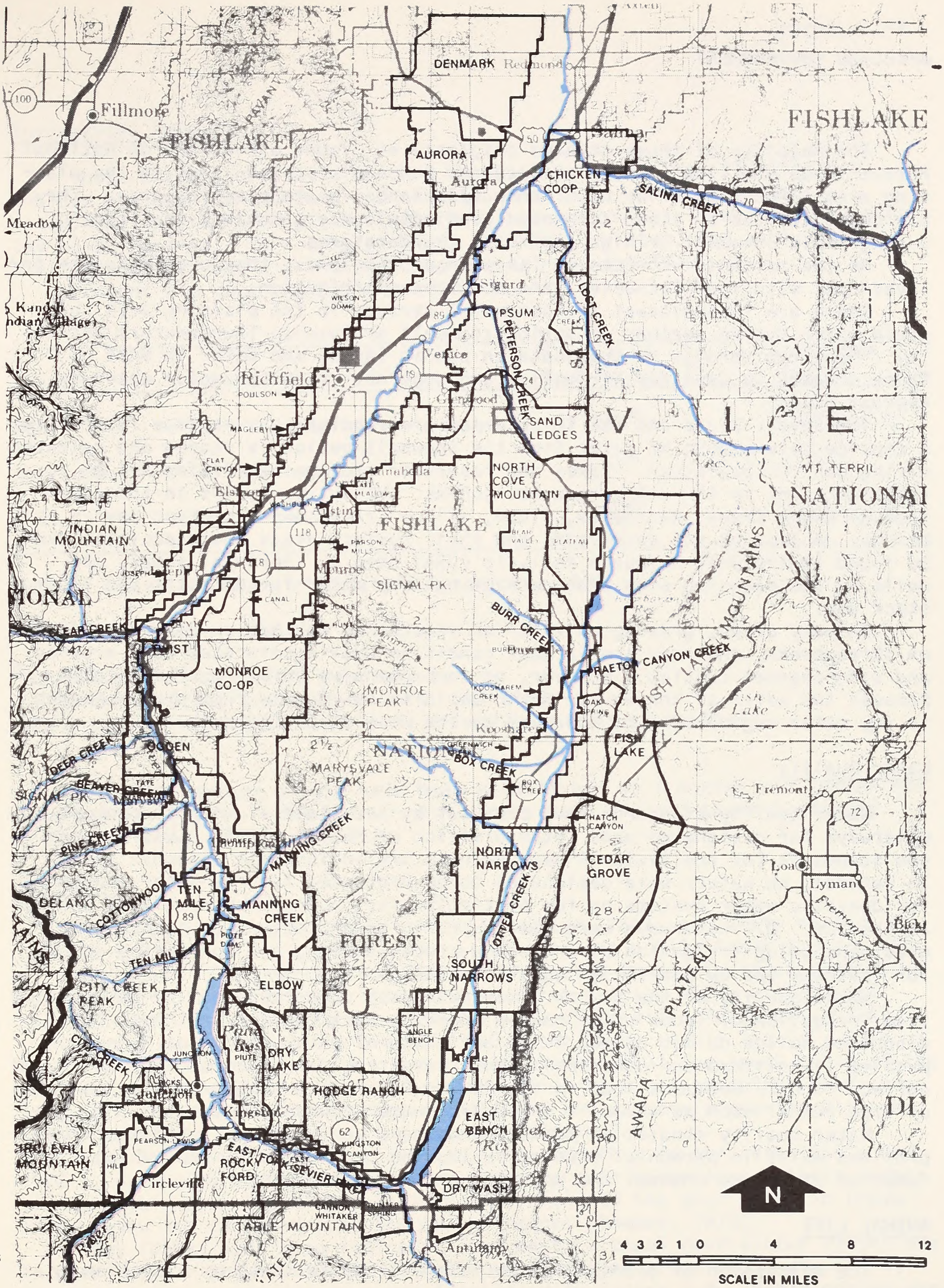


Figure 3-3 (continued)

RESERVOIRS AND STREAMS WITHIN THE PLANNING AREA

The majority of these streams originate at higher elevations on National Forest lands and flow through private and BLM-administered lands in the planning area. About 40 miles occur on public lands in the planning area. They are characterized by steep streambed gradients and are subject to flooding during rapid snowmelt or high intensity thunderstorms.

As the perennial streams run through public lands, they provide water for livestock, wildlife, fisheries, and downstream irrigation.

There are intermittent and ephemeral streams in the planning area that yield water during periods of spring snowmelt or intense thunderstorm activity. Many run through or originate on public lands, and water in most of these streams is used for irrigation and does not reach the major waterway (Sevier River).

The Sevier River and its tributaries are regulated by storage reservoirs. A considerable amount of water from the snowmelt period is stored and released during July to September. Lakes and reservoir storage facilities are an important part in the water resource scheme. Major reservoirs in the area include Otter Creek, Koosharem, Piute, Willow Creek, Gunnison, and Sevier Bridge. A list of the reservoirs and their surface areas and capacities can be found in the Unit Resource Analysis (URA) Step 2. Springs, seeps, and wells in the planning area provide high quality water for domestic and livestock use.

In many areas, grazing on riparian vegetation has had an adverse effect on streambanks, and many are in poor condition with accelerated bank erosion and side-channel cutting. However, no comprehensive survey has been taken. Because the water of the Sevier River basin is so closely regulated, changes to any water regime must be approved by the Utah State Engineer.

Water Quality

Water quality standards have been set by the State of Utah to protect waterways for designated uses (Utah Division of Health, 1978). Use classes and standards for the Sevier River drainage are included in Appendix III-4. In general, no waters were designated to be protected for raw water sources for domestic water systems or for protection for instream recreational use and aesthetics. All waterways were designated to be protected for agricultural uses, including irrigation of crops and stockwatering, and to varying degrees for instream use by beneficial aquatic wildlife.

Water quality of the Sevier River decreases downstream due to return flow from irrigation of lands which have a moderate salt content, although total dissolved solids do not exceed State agricultural water standards. Another problem is coliform and other pollutants resulting from feedlot activities and surface runoff. Sediment load in the Sevier River is a problem during periods of high runoff such as snowmelt or severe summer thundershowers.

Water quality studies on public lands have been limited. Sediment load problems exist in perennial streams during the periods mentioned, which are a function of stream channel and upstream erosion condition.

ANIMAL LIFE

The discussion of terrestrial animals will be followed by a section on aquatic animals.

Terrestrial Animals

Those animals of public concern in the Mountain Valley Planning Area include big game, threatened and endangered animals, and sagegrouse.

Three species of big game (mule deer, pronghorn antelope, and elk) occupy the planning area. This area provides late fall, winter, and early spring habitat for deer and elk and yearlong habitat for antelope.

Present big game population and trends are given below.

Species	Type of Study	Estimated Population	Population Trend
Deer	Pellet group/harvest data	17,933[a]	Increasing
Antelope	Aerial census	96[b]	Static
Elk	Aerial census	656[a]	Increasing

Source: Utah Division of Wildlife Resources, 1979.

[a]Based on 5-month period of use.

[b]18 animals, Venice herd, yearlong.
30 animals, Otter Creek Bench herd, yearlong.
48 animals, Parker Mountain herd, primarily summer (7 months).

Big game seasons of use have been established as 7 months for summer and 5 months for winter. The current AUM use by wildlife and their predicted needs are shown in Appendix I-1.

Mule Deer

The planning area provides primarily winter, fall, and early spring habitat for 13 deer herd units. These deer utilize public lands for crucial winter ranges. The crucial range (acres on public lands) is located mainly between agricultural private lands and steep-to-rolling hills of National Forest lands. According to the Utah Division of Wildlife Resources (UDWR), the current deer populations are well below the prior stable levels. (See Appendix II-2 for rationale for prior stable numbers.) The exact cause of the population status is not known. Overharvesting of does, poaching, predation, livestock competition, poor range conditions, and extreme winter conditions are factors that may be affecting the deer population.

Data in the Utah Big Game Handbook indicate that in the late 1960's and 1970's, extensive deer herd reduction programs were undertaken. These reductions, combined with a winter kill in 1972, reduced the deer herds in these units below the carrying capacity of the ranges (Bowden, 1979).

They (UDWR) have also indicated that most critical deer winter ranges are in poor to fair condition with a static to declining trend (Appendix III-5). Crucial winter ranges for deer are identified in figure 3-4. Early spring use areas are essentially the same as winter use areas.

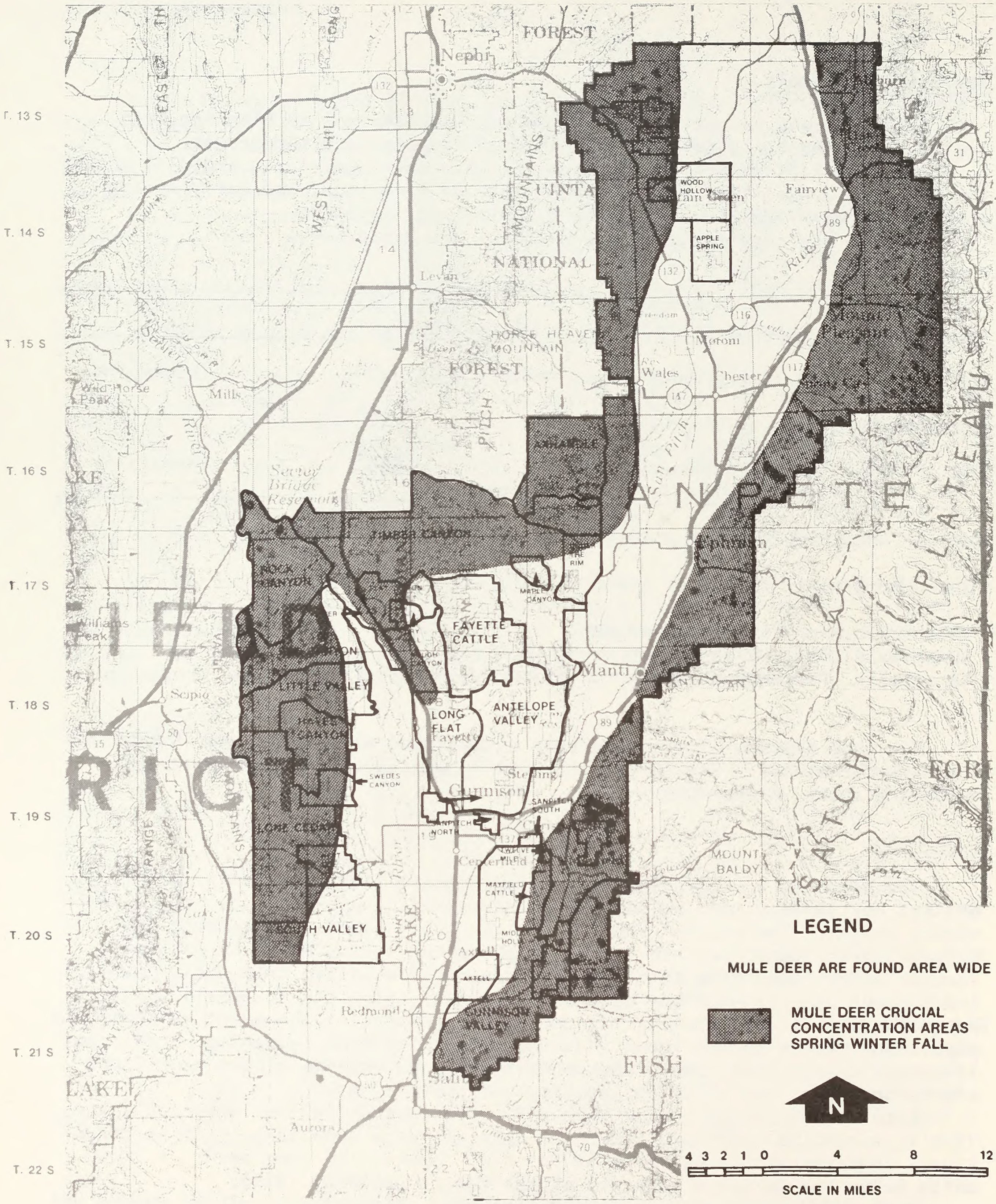


Figure 3-4

MULE DEER CONCENTRATIONS WITHIN THE PLANNING AREA

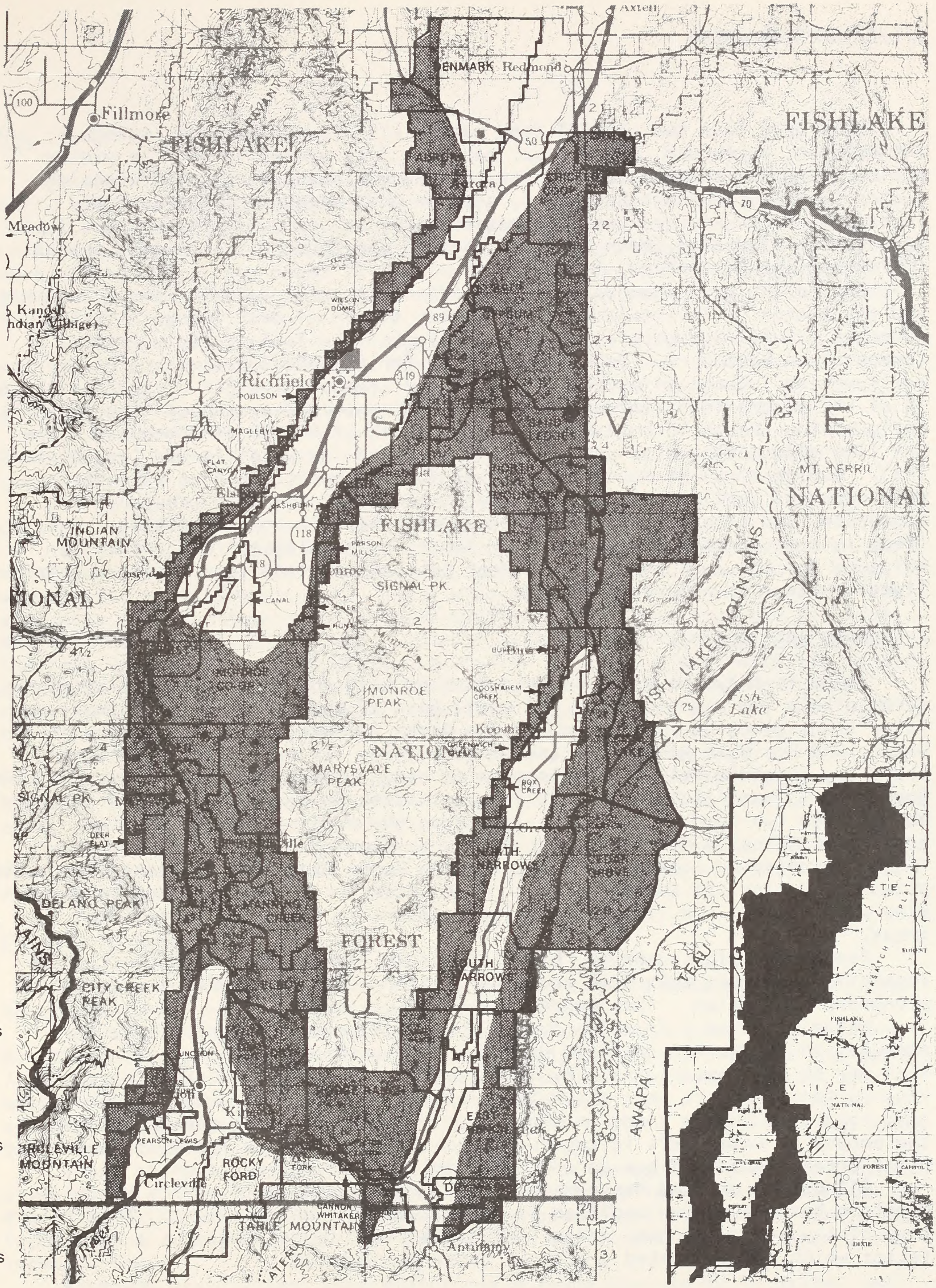


Figure 3-4 (continued)

Mule deer have two crucial food needs: (1) browse (mountain mahogany, bitterbrush, sagebrush, black sage, oak, etc.) is needed during the winter period (November through March), for body conditioning during the breeding season (November through December), and for body maintenance through the remainder of the winter; and (2) grasses (cool season varieties) become important during migration (both fall and spring) and through the fawning season (March through May) (Kerr, 1979).

Due to the past changes from browse to grass dominance in some allotments and the season of livestock use, the winter supply of deer forage is often consumed or utilized before the deer arrive in late fall or early winter (November or December). Deer also compete for important grass species in early spring. There is direct livestock-deer competition for winter forage in 54 of the 90 grazing allotments and direct livestock-deer competition for early spring (March through April) forage in 18 of the 90 allotments. There are five allotments which are currently reserved for wildlife use (see Appendix I-1). During the last decade, desirable forage species such as bitterbrush, serviceberry, curlleaf mountain mahogany, birchleaf mountain mahogany, big sagebrush, and black sagebrush have generally been in poor condition. The trend in some areas has been slightly improving resulting from good winter moisture for the past 3 years, low deer populations, and less-than-authorized livestock use for several years.

Pronghorn Antelope

There is only one antelope herd hunting unit and three distinct antelope herds within the planning area. A small herd of approximately 30 animals on Otter Creek Bench is established in the North Narrows, South Narrows, East Bench, and Dry Wash Allotments (see figure 3-5). In the vicinity of Venice, there are approximately 20 antelope which range through the Lost Creek, Chicken Coop, and Gypsum Allotments. Little qualitative or quantitative data is known about these two herds which broke away from the original Parker Mountain transplant to establish in the habitat areas mentioned above. A portion of the larger herd on Parker Mountain graze on Cedar Grove and Fishlake Allotments primarily during the summer months. More intensive study is needed to determine what factors are limiting antelope numbers in these two "satellite" areas.

Presently, big sagebrush, black sagebrush, rabbitbrush, and short-grass vegetation subtypes meet food and cover requirements for a viable and healthy pronghorn population. (See Appendix II-3, table B.)

Water could be a limiting factor for antelope in the Venice area and somewhat in the Parker Mountain area. Some livestock operators haul water that may be used occasionally by antelope but, more often, livestock are removed from the area when the water supply is gone. The number of antelope that remain on public lands in the summer is unknown and is contingent upon the amount of water left in the reservoirs after livestock leave in June. The Otter Creek bench herd has an adequate, reliable source of water.

All Bureau of Land Management (BLM) fences which could affect the Parker Mountain herd have been modified to allow free antelope movement. This is not true of the other two herd areas. Antelope-tight fences could be a limiting factor which has prevented growth of these populations.

Elk

The elk found throughout the planning area result from transplants in the early 1900's. These transplants were made to re-establish the elk on historic ranges. There are presently five elk herd hunting units. The elk from these units summer primarily on National Forest lands (see figure 3-5). Even though much of the elk winter range is also on National Forest lands, elk use of public lands has increased in the last decade. They currently utilize 1,726 AUMs in 37 of the 90 allotments in the planning area.

Some natural phenomenon (drought, frost, insect infestation, etc.) and management practices of the BLM, Forest Service (FS), and livestock operators have resulted in a gradual change in vegetation (browse to grass) in some allotments. The change has been conducive to expansion of elk habitat.

Literature indicates that elk prefer grass during all seasons, if available (Murie, 1951). It also indicates that elk diet is flexible and consumption often corresponds to composition of available vegetation.

In general, elk preferences for vegetation closely resemble that of cattle, and they are often in direct competition with cattle.

Important elk forage species are mountain mahogany, sagebrush (especially natural seed stalks), Indian ricegrass, needle-and-thread grass, blue bunch wheatgrass, crested wheatgrass, and a wide variety of forbs and other browse and grass species, depending on their availability. Data from the Fishlake National Forest adjacent to this planning area (Crocker-Bedford, FS, 1979) indicate that 95 percent of winter vegetation used was grass, with the remainder of use on ephedra, juniper, rabbitbrush, and thistle. During another observation period in a different vegetation type, browse was the most heavily used (oak, 66 percent, sagebrush, 22 percent) (BLM, URA Step 3, 1979a).

Limiting factors for elk in the planning area are presently unknown. Probable elk winter range and migration patterns are shown in figure 3-5. Competition for forage between deer and elk is not a problem because different areas are usually used during critical winter periods.

Elk and cattle directly compete in most areas where they are in need of a food source at the same time or in an area where one class of animal arrived first.

Endangered Species

The American bald eagle, peregrine falcon, and the Utah prairie dog are three endangered species found in the planning area.

The bald eagle is a winter resident, generally inhabiting the area from November through late March or early April. Fish and waterfowl are the main food source, but small mammals and carrion provide a secondary source. Primary use areas are along water courses and valley bottoms. Concentration areas are Koosharem, Otter Creek, Piute and Sevier River Reservoirs, and along the Sevier River (see figure 3-6 for roost areas).

There are no historical or present aeries of peregrine falcons within the planning area. The presence of nesting waterfowl and large concentrations of migrating waterfowl make it very likely that peregrines did at one time nest in this area. This bird has been observed in Sevier Valley, but reports are inconclusive.

Although prairie dogs were historically found through Grass Valley and the Cedar Grove Allotment, only a few colonies now remain, most of which are on private lands in Grass Valley. The only public land that now contains

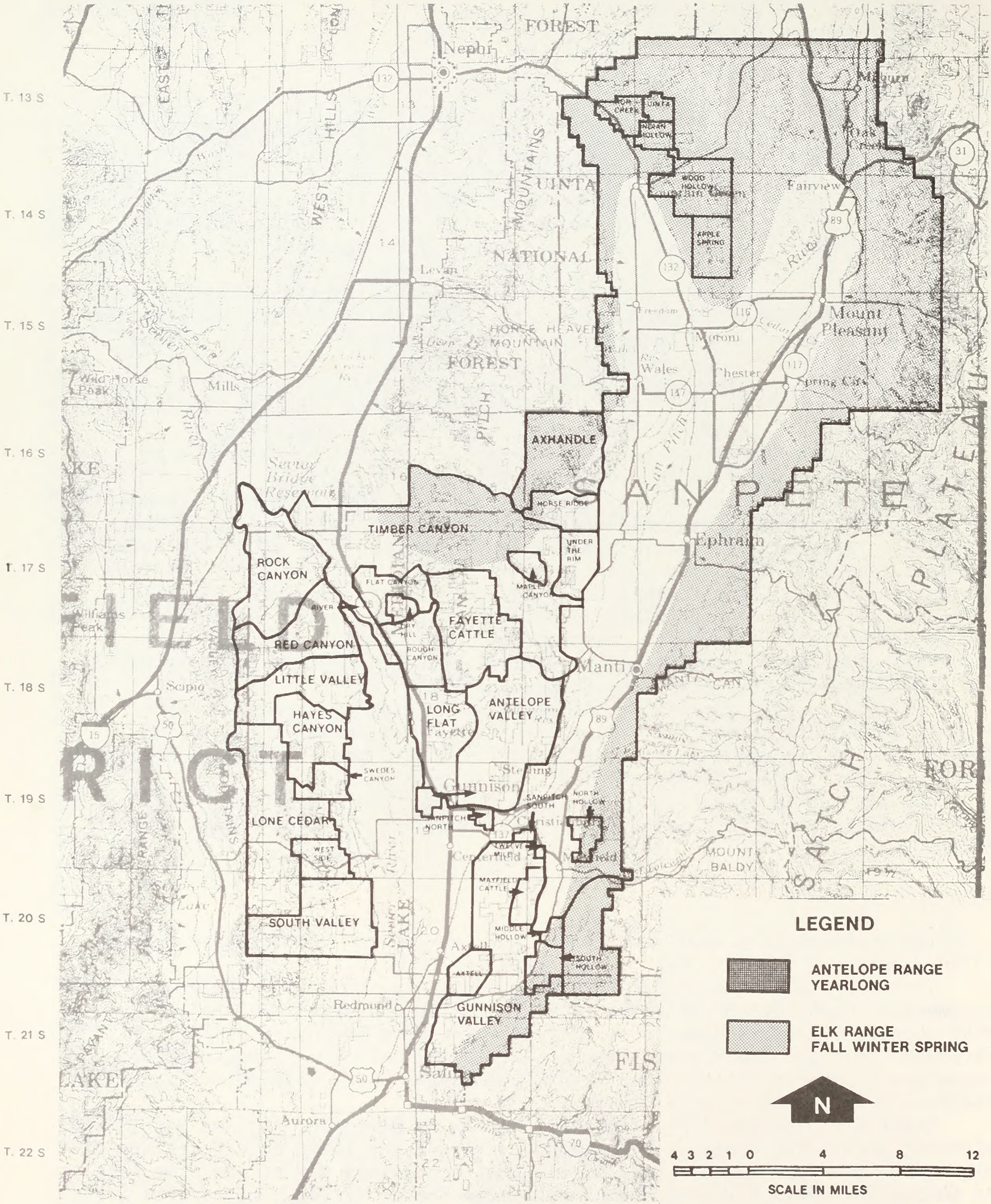


Figure 3-5

ELK AND ANTELOPE RANGE WITHIN THE PLANNING AREA

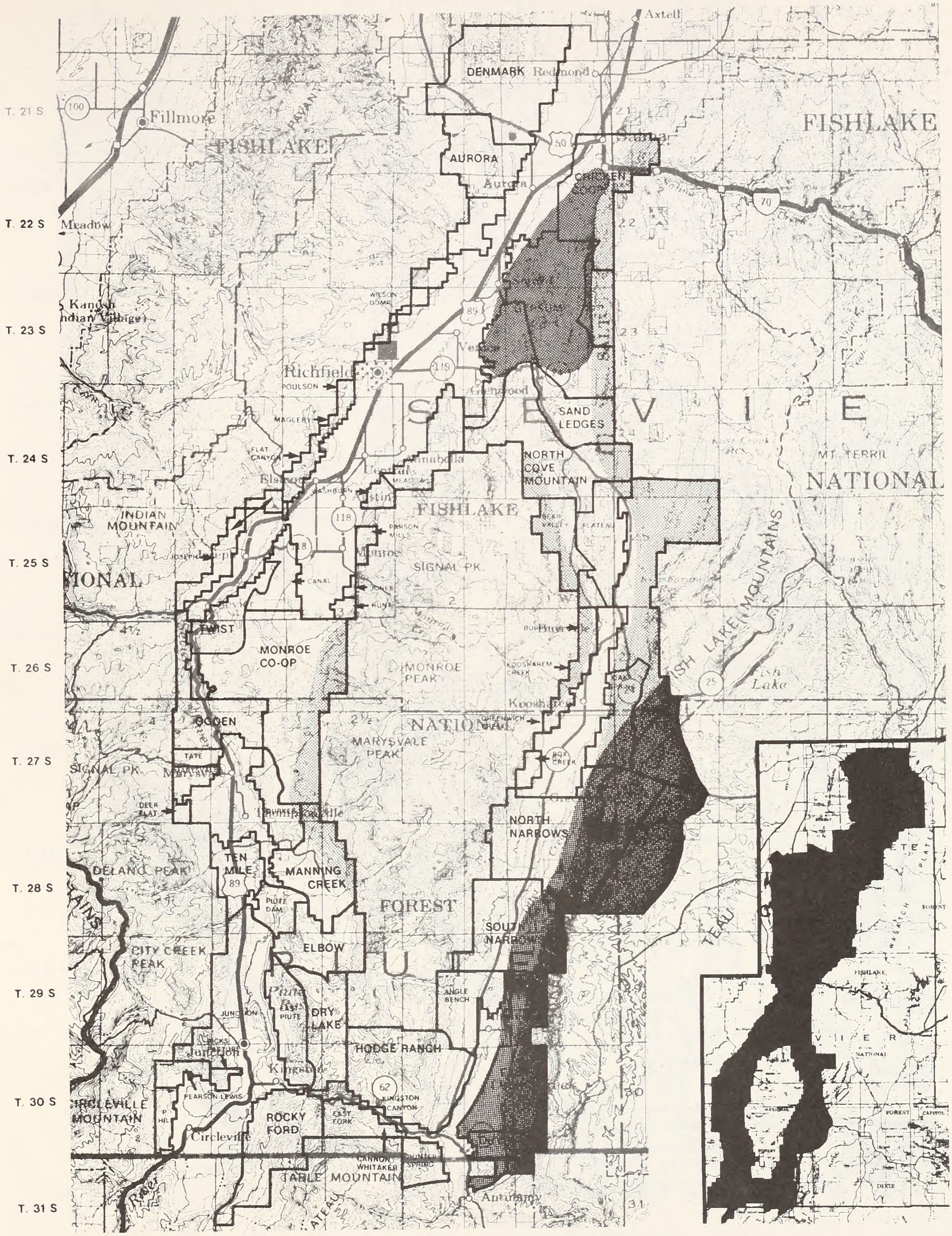


Figure 3-5 (continued)

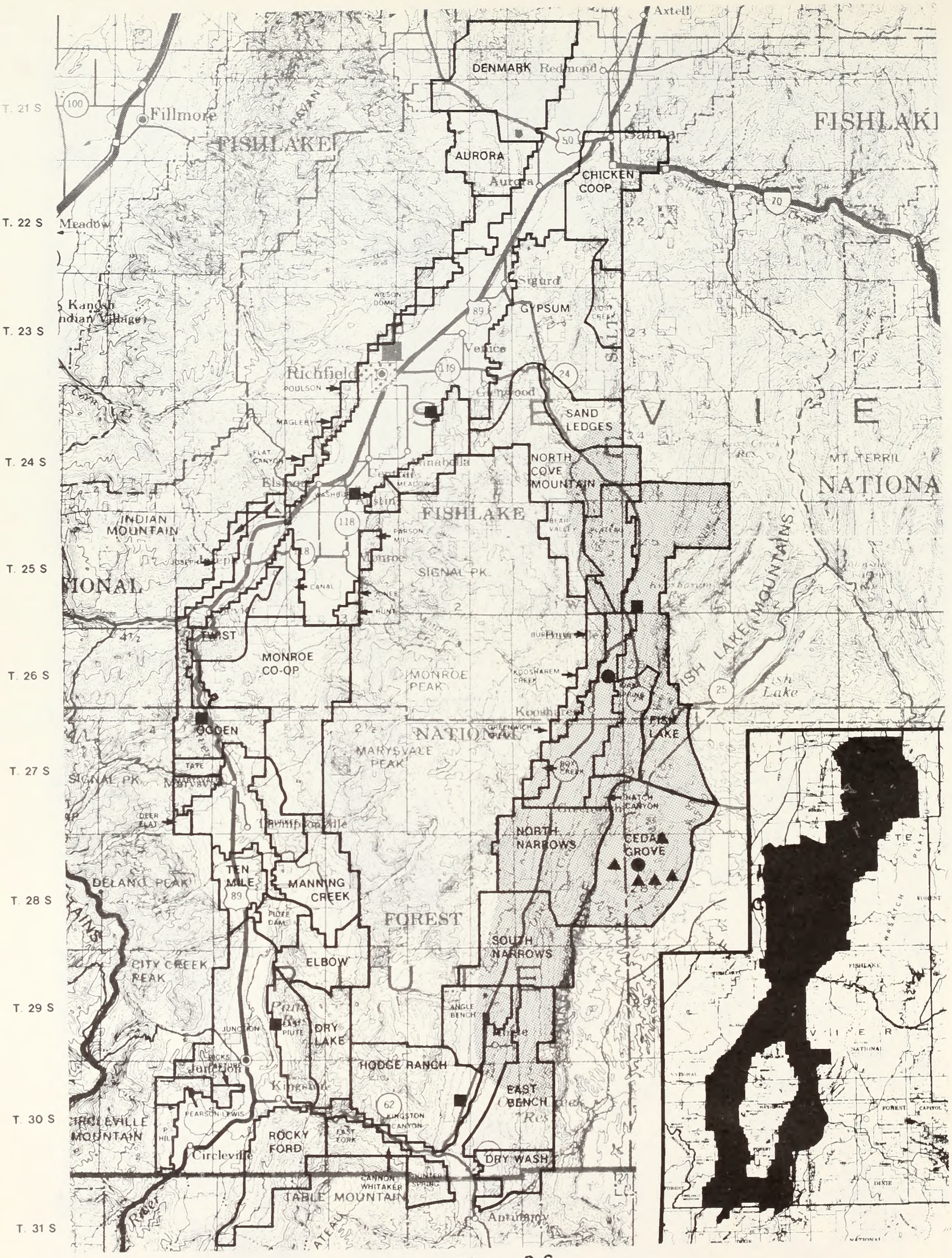


Figure 3-6

UTAH PRAIRIE DOG, BALD EAGLE, AND SAGEGROUSE HABITATS WITHIN THE PLANNING AREA

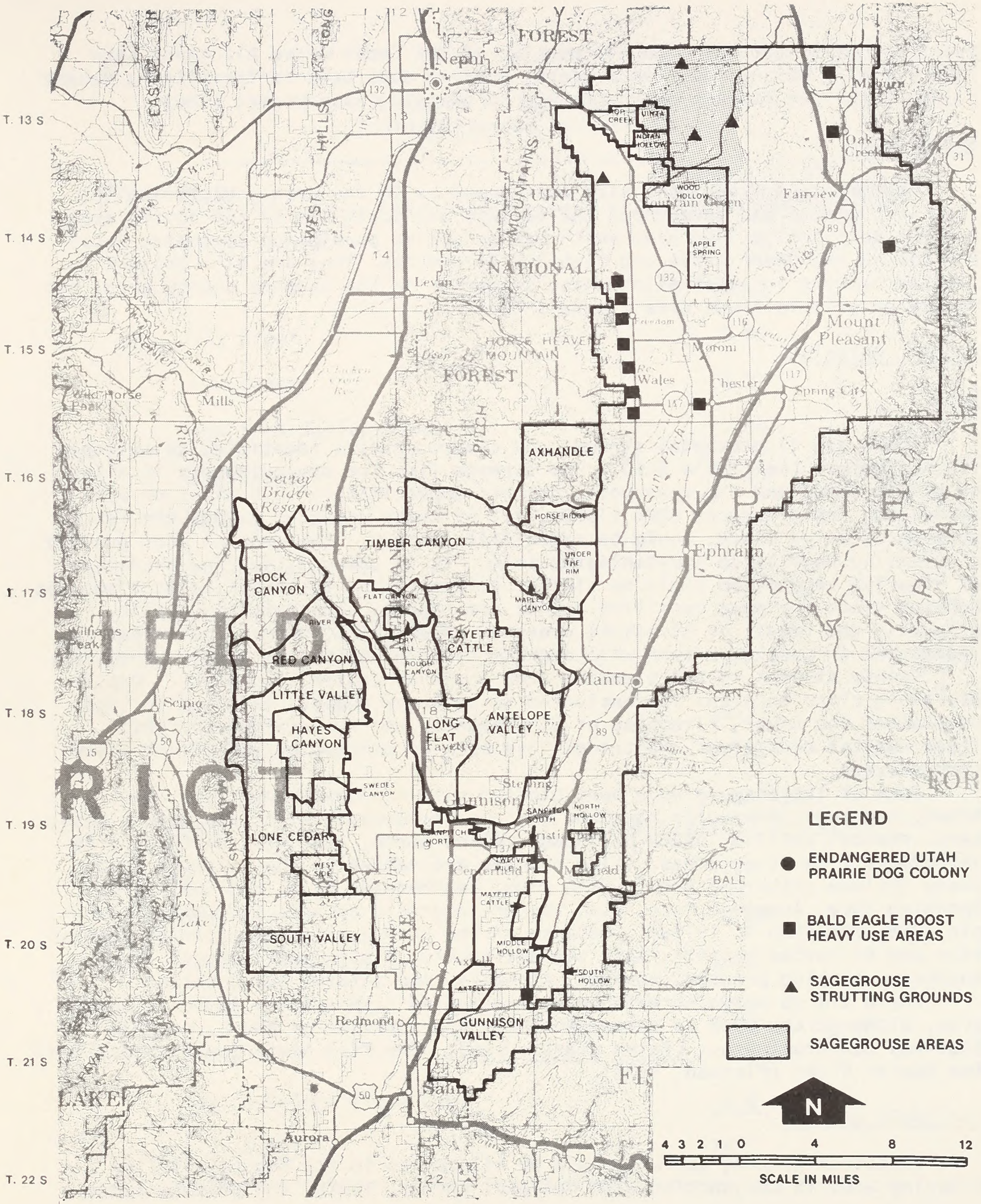


Figure 3-6 (continued)

prairie dogs is the Wayne County portion of the Cedar Grove Allotment (see figure 3-6). During the last 2 years, prairie dogs have re-inhabited a vacant colony which now numbers approximately 60 animals (Hasenyager, 1980).

Sagegrouse

Sagegrouse are the game bird most populous in the area. Historically, they were widespread throughout the valleys and foothills of the entire area. Now the only public land area which has an active population is on the Awapa Plateau in the Cedar Grove and Fishlake Allotments. They are also present in limited numbers in other allotments, primarily in the Sanpete County area, but mostly on private lands (see figure 3-6).

Aquatic Animals

Fish

There are 11 perennial streams and six reservoirs identified as suitable fishing waters (see table 3-3). The streams flow for approximately 16 miles on public lands and the reservoirs contain approximately 15.5 miles of BLM shoreland. According to UDWR (1970), all of these streams, except the fenced portion of Otter Creek, would be rated fair to poor. The general poor quality of riparian vegetation substantiates this. It is assumed that the condition of riparian vegetation would be similar or correspond to condition of fisheries habitat since the same causitive agents are shared. The existing quality is primarily the result of livestock overuse. Ryan (1975) states that riparian vegetation in poor condition will degrade fishery habitat to a poor condition.

Twenty streams in the planning area occur on cattle allotments. Cattle use along riparian areas is considered to be heavy and has resulted in less vegetation and cover, sloughing of streambanks, and temperature changes. These habitat conditions and trends have been documented by BLM stream inventory surveys.

Some of the streams have been stocked with rainbow, brown, and brook trout, and some reservoirs have had walleye, largemouth bass, smallmouth bass, carp, channel catfish, black bullhead, yellow perch, and great northern pike introduced from other areas. Nine species are native to the planning area. These include cutthroat trout, Utah chub, leatherside chub, redside shiner, speckled dace, longnose dace, Utah sucker, mountain sucker, and mottled sculpin (BLM, URA Step 3, 1979a). Because of the poor quality of riparian vegetation and fisheries habitat, most streams provide fishing as a result of a hatchery stocking program; however, there is some natural reproduction.

There are no known threatened or endangered fish species in the planning area, although the UDWR is concerned about the survival of the Bonneville (native) cutthroat trout (*Salmo clarki Utah*). The fish historically inhabited the Sevier River (Hickman, 1978).

LIVESTOCK GRAZING

Livestock grazing operators use 90 allotments in the Mountain Valley Planning Area in conjunction with National Forest, State, and private lands.

TABLE 3-3

Mountain Valley Planning Area
Fishing Streams and Reservoirs

Streams	Miles on BLM Administered Land
Beaver Creek	2.30
Birch Creek	0.90
City Creek	0.50
Deer Creek	0.10
East Fork Sevier River	1.95
Lost Creek	2.25
Manning Creek	1.25
Otter Creek	4.50
Pine or Bullion Creek	0.33
Sevier River	1.25
Ten Mile Creek	0.50
Total	15.83
Reservoirs	**Miles on BLM Administered Shoreline**
Gunnison	1.0
Koosharem	0.25
Otter Creek Reservoir	10.0
Piute	1.0
Rocky Ford	0.25
Sevier Bridge (Yuba Dam)	3.0
Total	15.5

Source: URA Step 3, 1979.

Number of Operators and Average Licensed Use

There are presently 111 separate operators having 167 livestock operations in the planning area. Appendix III-6 summarizes the number of operators, the number of AUMs used, and their past grazing level. Of the 111 livestock operators in the planning area, 63 run cattle, 23 run sheep, and 25 run both.

The relationship of the number of livestock operators and the number of AUMs currently allocated in the planning area, as compared to Utah and ten other western states, is given below.

Number of livestock operators in western states	13,821
Number of livestock operators in Utah	2,057
Number of livestock operators in Mountain Valley Planning Area	111
Number of AUMs allocated to cattle and sheep in western states	10,227,730
Number of AUMs allocated to cattle and sheep in Utah	1,023,088
Number of AUMs allocated to cattle and sheep in Mountain Valley Planning Area	39,694

Appendix I-1 lists the individual allotments, current preference, and licensed use.

Livestock operators have indicated that they annually license more livestock than they graze. By doing this, they can retain the option to vary the amount of livestock they graze up to the present licensed use without having to apply to BLM for changes. Maintaining a high licensed use implies that the allotment can carry that number of livestock. This can give the wrong indicators in determining range, condition, trend, and production. Running less than licensed use also tends to inflate the market value of the base property, because market value is often based on the supposed existing grazing use and not on the true grazing use. Figure 3-7 shows the averaged licensed use for the past 10 years.

Size of Operators

Ranching operations in the planning area were divided into livestock and grazing size groups. The "average ranch" would apply to the majority of individual operations in a particular category and differences may occur among individual operators. The following are the number of livestock operators and their size category:

Category	Number of Operators
Small (1 to 99 cattle)	42
Medium (100 to 199 cattle)	14
Large (>200 cattle)	14
Small (1 to 199 sheep)	6
Large (>200 sheep)	35
Total	111

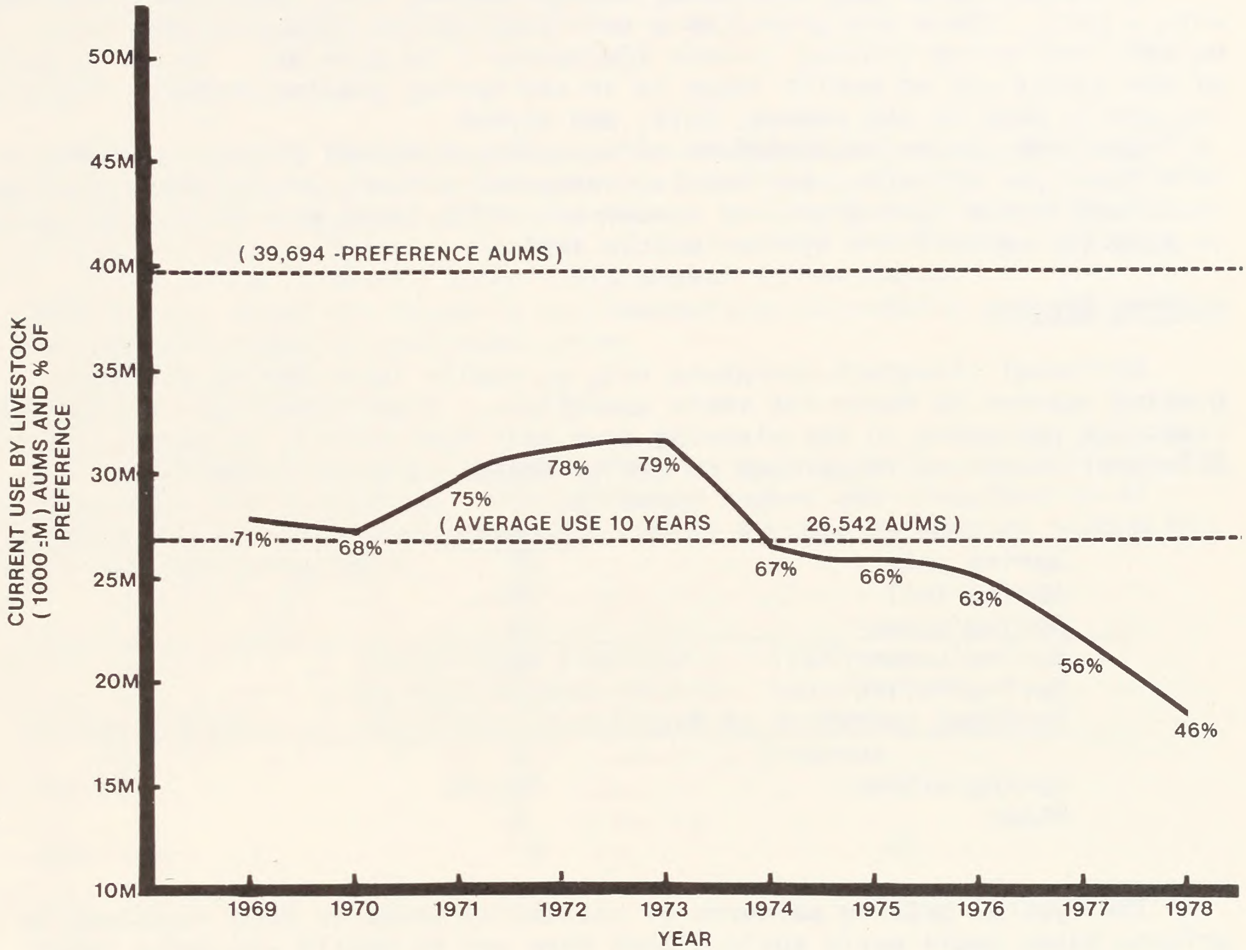


Figure 3-7

MOUNTAIN VALLEY LIVESTOCK OPERATIONS FOR THE LAST TEN YEAR USE PERIOD

Kinds of Operation

Sheep and cattle are the two kinds of livestock grazed in the planning area. The livestock operations are primarily cow-calf and ewe-lamb. At various times some of the cow-calf operators run a small scale steer operation in addition to their normal operations.

Cow-calf operations consist of a base herd of cows, each cow preferably with a calf. These are grazed as a unit (cow and calf) during the fall, winter, and spring grazing seasons (September 1 to June 30). About 90 percent of the cattle use on public lands is in the spring grazing season. The remaining use is made in the summer, fall, and winter.

Ewe-lamb operations consists of a base herd (band) of ewes with one or more lambs per unit (ewe and lambs). About 80 percent of the sheep grazing is conducted in the spring grazing season on public lands and the remaining use is made during fall and winter (mostly fall).

Grazing Seasons

Different livestock operators rely on public lands during different grazing seasons to round out their operations. Eighty-seven percent of the livestock operators in the planning area rely most heavily on spring grazing. A further breakdown in percent of use by season is given below:

	Percent
Spring only	31
Spring/fall	10
Spring/summer	10
Spring/summer/fall	12
Spring/fall/winter	18
Yearlong (portions of four seasons)	6
Spring/winter	10
Other	3

The typical grazing patterns of use are to graze or feed livestock on private lands until early spring then turn out on public and State lands until summer (July); then turn on to the higher elevation, generally the National Forest lands, until fall (September 1 or October 1); then the livestock are returned to public lands; then taken to the private lands or allowed to graze some portion of the public lands during the winter season (December 1 to March 30).

Management Practices

The past management practices have been primarily seasonal use each year. There have been attempts in some allotments to develop rest-rotation grazing systems, but generally the use by livestock has been with little control of their movements within allotments except from limited herding, salting, or fencing. Individual operator's methods of management vary regarding time on the job (full or part time), breeding programs, breeds of cattle, kinds of range developments, methods of maintenance of range improvements, livestock management practices, and supplemental feeding and salting practices.

Calving generally takes place from February through April on private farms and ranches or on the allotments, if they are grazing there at the time. Calves weigh between 120 and 200 lbs. when they are taken to the spring ranges. When cattle are removed from summer ranges around October, calves are weaned and sold at weights between 350 and 400 lbs.

Lambing occurs in the months of March and early April. The lambs are usually cut out of the band and sold in October or November, at which time they usually weigh between 75 and 85 lbs.

Breed of Livestock

The Hereford beef cattle are the most common breed found in the planning area. Other important breeds are Angus and Charolais. About 5 to 10 percent of the cattle operators have purebred cattle. Crossbred cattle are common with Hereford-Angus or others. On some of the smaller allotments, mixed breeds are found and some dry dairy types appear on the range.

Most of the sheep are Columbia and Rambouillet crossbreds and are used for dual purpose lamb and wool production.

RECREATION

The Mountain Valley Planning Area provides opportunities for hunting elk, deer, antelope, and sagegrouse. The estimated number and distribution of hunter days and the estimated percent of hunter success by species hunted is shown in the following table.

Animal Hunted	Hunter Days Provided by Public Lands Within the Mountain Valley P.A.	Percent of Hunter Success
Deer	19,137	32
Antelope	5	92
Elk	1,164	10
Sagegrouse	179	0.69[a]

Source: BLM, 1979a.

[a]Birds per hunter day.

On a regional basis, public lands provide approximately 8 percent of the big game hunter days and 7 percent of the sagegrouse hunter days occurring within central Utah (Juab, Millard, Piute, Sanpete, Sevier, and Wayne Counties) (BLM, 1979).

Trout fishing occurs along Beaver Creek, Pine Creek, Lost Creek, Otter Creek, and the Sevier River. Public lands provide an estimated 21,957 fisherman days annually (BLM, 1979a). There is no data available to identify percent of fisherman success or to compare fishing opportunities on a regional basis.

SOCIOECONOMICS

General Characteristics

Agriculture and livestock grazing have been the economic mainstays in the region since the 1860s. The Mountain Valley Planning Area produces raw materials with little or no processing beyond the initial stages. The majority of crops currently produced are raised as feeder crops to support the intermountain sheep and beef industry, with cattle and sheep feed-lot operations important throughout the entire region (Fawcett et al., 1979). Manufacturing and other economic sectors are becoming more impo ant to the local economy.

Portions of Sanpete, Sevier, and Piute Counties are contained in the planning area. These counties are largely agriculturally based, with livestock representing a significant source of income and employment. The neighboring counties of Juab, Millard, and Wayne share many geographic and economic ties. Together they comprise the Six County Economic Development District.

Main trade and community centers within the planning area are Mt. Pleasant (2,607 population), Manti (2,230 population), Ephraim (2,705 population), Gunnison (1,449 population, Salina (2,128 population), Aurora (854 population), Monroe (2,000 population), Richfield (6,225 population), and Junction (170 population). These communities are located in north-south trending intermountain valleys which bisect the three counties.

Population and Employment

Estimated total population in the six county district for 1978 was 46,725, up 32 percent from the 1970 figure of 35,288. Total employment for 1978 was estimated at 15,610, with about 1,080 (7 percent) employed in agriculture (Fawcett et al., 1979). Many livestock operators work at other jobs. Employment figures for 1971 and 1976 show a 5.2-percent decrease in agricultural employment in the region (U.S. Department of Commerce, Bureau of Economic Analysis [BEA], 1978).

Income

The factors which affect a livestock operator's annual income are: (1) price per unit weight at sale; (2) weight per animal; (3) number of animals; and (4) costs of raising the animal to marketability. BLM management has the potential of affecting all but the price per unit weight.

The annual per capita personal income in the region was $2,450 in 1970 and $4,350 in 1978.

In 1977, earnings (labor and proprietor's income) from the farm sector were $13,837,000 (11 percent of total earnings), representing the fourth largest sector in the region. The largest sector was State and local governments with $22,578,000 (17.9 percent of total earnings), and the second largest was manufacturing with 15.2 percent of total (BEA, 1978).

The total estimated annual expenditures on big game hunting (deer, antelope, and elk) in the planning area are $893,000.

Ranch Economics

The budgets for the average ranch groups as described under livestock grazing are displayed in Appendix III-7 and show the revenues and expenses for the "average ranch" within each category. These budgets also provide baseline

data for subsequent impact analysis. Partial budget information relative to these categories is presented in table 3-4. The assumption inherent in this approach is that conclusions applied to the "average ranch" would also apply to the majority of individual operations in a particular category. However, it should be noted that wide differences may occur among individual operators.

Capital Values

BLM-allocated AUMs may be transferred from one operator to another. The dollar value given by one operator (buyer) to induce a present permit holder (seller) to transfer his permit is known as the "permit value" of an AUM. This "permit value" may have a significant bearing on the rancher's wealth position as it is part of the ranch's overall value. This affects both the rancher's ability to secure loans and the total value of the operation. Because the permits were granted to permittees without cost and may be rescinded without payment by BLM, a value is not recognized for these permits by the government. The current permit value of an AUM on the planning area is estimated at about $50.00 on the current market.

Attitudes and Lifestyles

Livestock operators are the most intensive users, therefore, the most interested in the planning area. This interest is tempered with what they regard as the implied threat of land use management and control resulting from outside multi-interests. Land use quality and quantity is understood to directly correlate with quality of ranching lifestyles. Most livestock operators in the three counties have strong historical ties to the landscape and to the sheep and cattle industry. In many examples, localized livestock operations have been traditionalized over several generations. Working in outdoor employment and directly interfacing with the region's natural resources permeates important lifestyle aspects. As a consequence, the local population regards the region as a good place to live and raise a family and, generally, would not consider relocating to another area for alternative employment opportunities. For the most part, livestock operators recognize a multi-use concept of public lands and feel they manage their use of vegetation and soil resources in a competent manner.

The second most intensive user group in the area is recreationists (mostly hunters), both local residents and people from outside the planning area. The predominant desire of this group is to see the planning area produce wildlife at a high level.

Most of the two user groups prefer a somewhat stable management program and do not affiliate with national organizations unless threatened.

Environmental and conservation groups and state and nationally affiliated organizations form another major interest group affecting planning area lands. Of these interest categories, preservation-oriented organizations seem to show the most concern for wildlife habitat protection, aesthetic values, cultural resources, scenic quality and limited recreation land utilization; hence, litigation proceedings by the Natural Resources Defense Council (NRDC). As a whole, environmental groups feel that public lands should be managed to the extent that they function as natural area environmental baselines.

TABLE 3-4

Partial Budgets for Each Category of Ranch Operators

	Categories				
	Small (1 to 99 cows)	Medium (100 to 199 cows)	Large (>200 cows)	Small (1 to 199 Ewes)	Large (>200 ewes)
Average Herd Size	49	126	280	72	528
Gross Ranch Income	$8,650	$24,888	$59,139	$5,222	$39,854
Total Cash Costs	$7,025	$17,103	$41,646	$2,658	$ 9,407
Net Cash Income	$1,625	$7,785	$17,493	$2,564	$30,447
Family Labor	$2,257	$5,609	$ 7,992	$1,598	$ 4,438
Return Above Cash Costs & Family Labor	$- 632	$2,176	$ 9,501	$ 966	$26,009
Average Number of BLM AUMs Used	72	126	245	257	1,911
Number of Livestock Operators[a]	42	14	14	6	35
Percent Dependence on BLM Permits	11	6	7	58	48

Source: U.S.D.A.; Economics, Statistics, and Cooperative Services - National Economics Division.

[a]Ranchers with mixed cattle and sheep operations are grouped according to the largest number of animals.

VISUAL RESOURCES

The Mountain Valley Planning Area is characterized by north-south trending valleys and mountain foothills. The foothills appear largely natural and are colored by the muted grays and greens of desert shrub. The valleys have been largely influenced by farming and rural townsite development and are colored by the seasonal variations of planted fields as well as by desert shrub.

Evidence of livestock grazing is common throughout the planning area in the form of fences, reservoirs, and vegetation modification.

Of five possible visual resource management (VRM) classes, four have been identified within the planning area. Locations of the four VRM classes are shown in figure 3-8. Management objectives for each VRM class allow a different degree of modification of the landscape. Management objectives for each VRM class are described in Appendix III-8.

CULTURAL RESOURCES

Archaeological surveys and inventories in the Mountain Valley Planning Area have been largely on a project-oriented basis. Because of this and the aboriginal economic pattern of locating in valley bottoms (now predominantly in private ownership), relatively few sites have been recorded on public lands.

Seventy-five archaeological sites had been recorded in the planning area as of October 23, 1979, basically consisting of four types: (1) lithic scatters resulting from tool production; (2) quarry sites where materials for stone tool production were obtained; (3) rock art sites consisting of petroglyphs and pictographs; and (4) campsites indicating some form of habitation (Technical Report, Harmon, 1979). None of these sites are eligible for nomination to the National Register of Historic Places.

The only prehistoric group known to have inhabited this area is the San Rafael variant of the Fremont Indian culture. The San Rafael Fremont, dating from approximately 700 to 1200 A.D., are known for their crushed-basalt and quartz-tempered pottery, wetlaid and drylaid masonry, and slab-lined pit structures (Marwitt, 1970). Only a fraction of the recorded sites in the area were positively identified as being of Fremont origin. The remainder may simply be lacking in diagnostic artifacts, or they may be indicative of another group of people. It is known that Shoshonean-speaking people (Ute, Paiute, Shoshone) were the sole inhabitants of Utah at the time of white contact (Hauck, 1977).

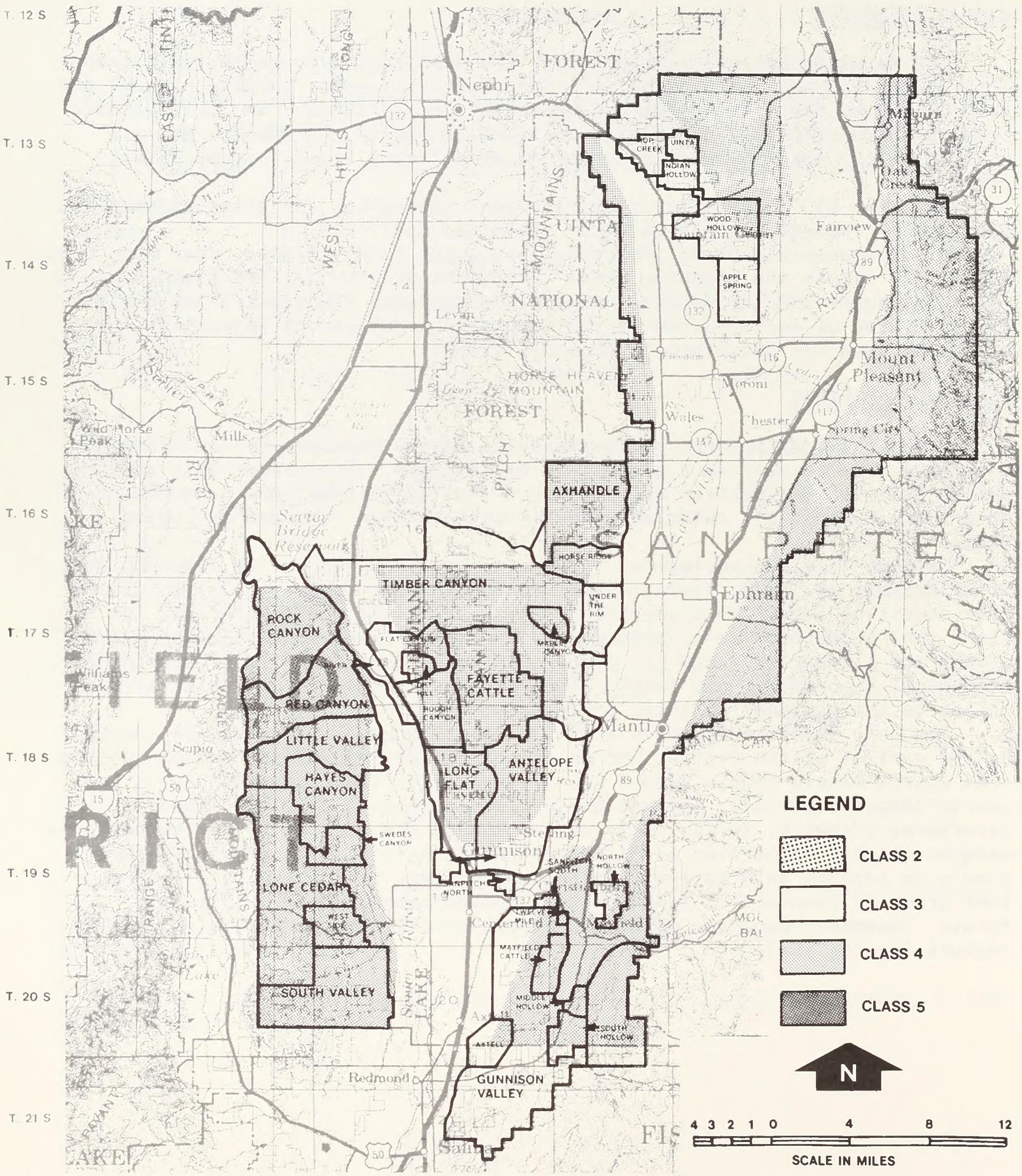
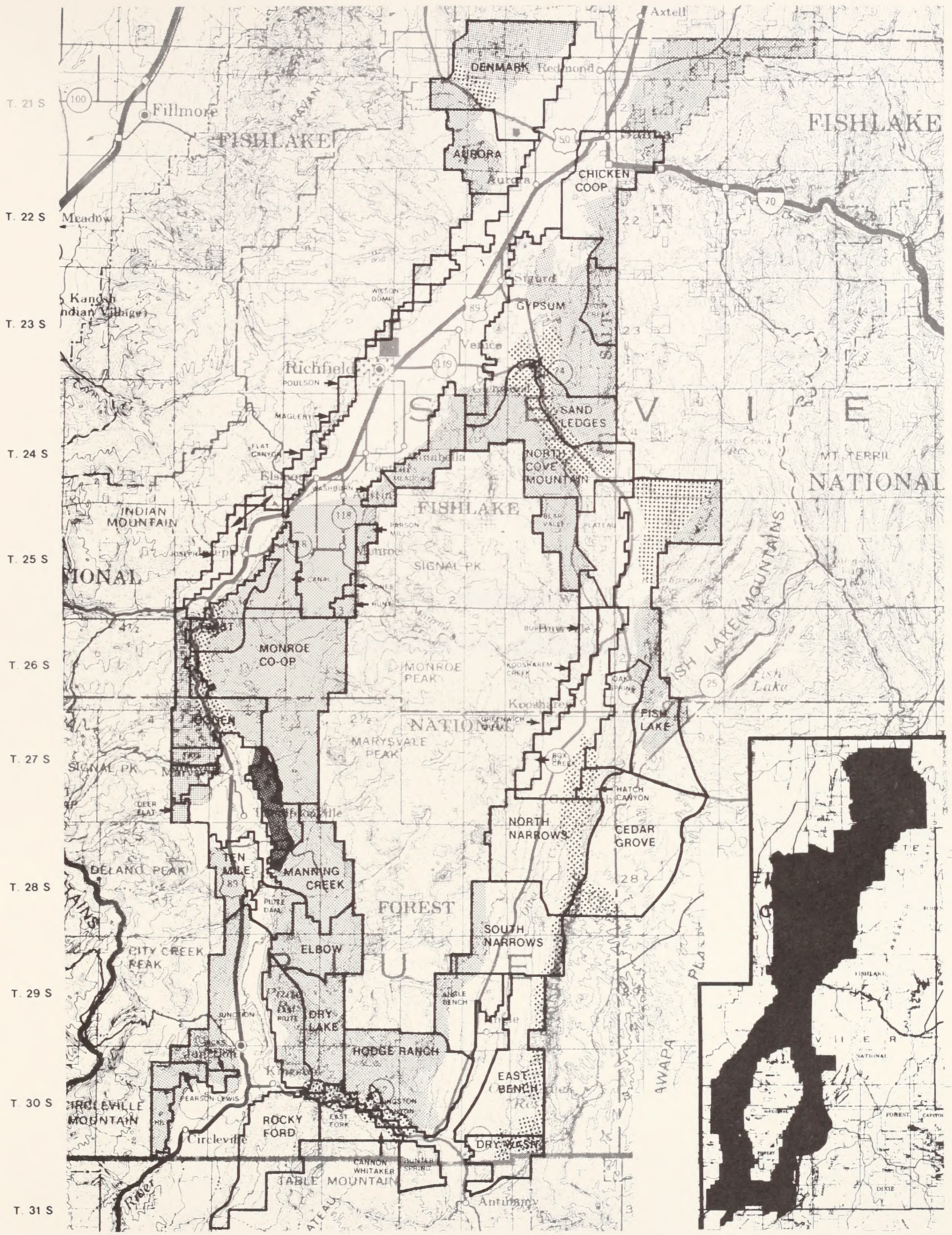


Figure 3-8

VISUAL RESOURCES MANAGEMENT (VRM) CLASSES



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VISUAL RESOURCE MANAGEMENT (VRM) CLASSES

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter identifies probable environmental consequences of the alternatives. Significant consequences discussed are those that affect the quality of human environment, are controversial, or affect a legally protected species or resource.

Basic Assumptions and Analysis Guidelines

The analysis will make projections of impacts and consequences into the future. Certain assumptions and guidelines are required, as follows:

1. Each alternative is analyzed as if it would be fully implemented and forage allocated would be fully utilized. Monitoring and studies would be carried out as described in Chapter 2.

2. Standard mitigating measures would be carried out as described in Chapter 2.

3. It is assumed that impacts to State and private lands would be similar to those identified for public lands. Positive or negative consequences are not treated in the analysis for those lands.

4. The alternatives and the preferred action would not involve direct government control over private or State lands that are intermixed or used in conjunction with Bureau of Land Management (BLM) livestock allotments, unless exchange-of-use agreements exist.

5. It is assumed that factors such as market conditions, labor, and other costs would remain constant. They are based on 1979 data.

6. It is assumed that the permittees would use all animal unit months (AUMs) allotted to them and, if necessary, purchase additional livestock to use any increase in BLM permits.

7. It is assumed that BLM would have the manpower and funds to implement the alternative or combination of alternatives chosen.

8. Annual utilization of key plant species would not exceed an average of 50 percent in any alternative except in Alternative E, where utilization would average 60 to 80 percent.

9. Since actual livestock use is unknown, current licensed use will be assumed to be actual use. This level of use will be considered as the existing situation.

10. The time frame for the analysis of the section on Short-term Uses Affecting Long-Term Productivity is not the same time

frame used in analyzing other impacts of the proposed alternatives. Under this section, short-term uses would occur within a 20-year period, a time that would include the accomplishment of all objectives of any proposed alternative. Long-term productivity would occur after 20 years, when attainment of the proposed objectives would be accomplished and subsequent effects would still be impacting the environment.

11. It is assumed that big game numbers would be managed by the Board of Big Game Control to meet the population level which could be carried by the allocated level in each alternative and that big game populations would increase to the allocated level.

ENVIRONMENTAL CONSEQUENCES OF IMPLEMENTING ALTERNATIVE ACTIONS

This chapter describes the impacts of each of the alternatives proposed in Chapter 2. For analysis purposes, the chapter is divided into alternative sections with resource components as subdivisions. This will aid the reader in comparing the consequences of various alternatives. Each of the resource component sections will contain an analysis followed by a conclusion of consequences.

The positive and negative consequences discussion in this Environmental Impact Statement (EIS) does not analyze all of the intricate aspects of the total ecosystem of the Mountain Valley Planning Area. It will highlight those portions in the analysis that are considered by the BLM interdisciplinary environmental analysis team to be of primary concern and interest to the public, to other agencies, and to the resources of public lands involved.

The dominant impact analyzed in this EIS results from livestock and big game grazing on the vegetation resource. However, consequences occurring to a lesser extent on other resources such as soils, watershed, wildlife, and socioeconomics are also analyzed.

The types of consequences occurring are short term and long term. The short-term impacts would last less than 5 years and occur as a result of implementation of the alternative actions. Long-term consequences are those lasting from 5 to 20 years or longer. Each consequence is analyzed in a cause and effect process as compared to the existing situation described in Chapter 3.

This chapter will also discuss unavoidable adverse impacts and the relationship between the short-term use of man's environment and the maintenance and enhancement of its long-term productivity. It will also identify the irreversible or irretrievable commitments of resources involved in implementing the alternatives.

The team has not identified any change agents in the proposed alternatives which would have impacts on geology, climate, air quality, or topography. There are no lands with wilderness values and no wild horses or burros in the planning area. Because there are no specific locations for developments, the possible impacts to visual resources have been analyzed for all possible locations. The results of the analysis are summarized in Appendix IV-1 for all alternatives and the analysis does not occur in the alternative section.

As provided for in the stipulations of the Programmatic Memorandum of Agreement (BLM, Advisory Council on Historic Preservation et al.), the BLM has entered into a memorandum of understanding with the State Historic Preservation Officer which outlines methods for compliance with the National Historic

Preservation Act (Appendix II-7). Even with the implementation of proposed mitigation, ground-disturbing actions could inadvertently damage or destroy cultural resources, thus resulting in a loss of scientific and educational information. Any destruction of cultural remains during construction of range developments or vegetation treatments would result in a long-term loss of scientific information since present salvage techniques do not ensure total information recovery. This adverse impact to cultural resources is irreversible. The scientific information lost as a result of that impact is irretrievable. These ground-disturbing actions involve construction activities, livestock trampling around water sources, and inundation of areas due to reservoir construction.

The intensive cultural resource inventory required by the proposed mitigation would be a beneficial impact to human knowledge of the resource as it would result in the documentation of previously unknown sites and areas.

Impacts to endangered or threatened plant species due to grazing have not been documented. There is no evidence linking present or past declines in the population or vigor of these plants to levels of grazing use. Likewise, the impacts of vegetation modifications and range developments upon these plants is unknown. However, surveys for endangered or threatened plants would be done prior to any surface disturbance or vegetation modification and appropriate mitigation would be applied. If it were determined that any BLM action might adversely affect any officially listed endangered or threatened plant species, formal consultation would be initiated with the U.S. Fish and Wildlife Service (USFWS). The affecting action would be modified to the extent necessary or cancelled, depending upon the biological opinion received from the USFWS.

The discussion of the consequences of each alternative will follow the general order of impacts from vegetation through soils, water resources, animal life, livestock grazing, recreation, and socioeconomics.

ALTERNATIVE A: OPTIMIZE NON-LIVESTOCK RESOURCES

ANALYSIS OF IMPACTS TO VEGETATION UNDER ALTERNATIVE A

Introduction

The level of grazing use by livestock and big game in the Mountain Valley Planning Area would be initially reduced by 7 percent. This reduction would be reflected by a 15-percent (74,838 acres) elimination and a 60-percent (298,780 acres) reduction of livestock grazing. Twenty-five percent of the planning area would maintain its present level of livestock use. In the long term, livestock grazing would be increased 133 percent, while big game use would increase 126 percent.

Utilization of vegetation within the planning area would not exceed 50 percent of key plant species. Use levels would be monitored using key plant species as indicators (see Appendix III-2). Grazing treatments would be implemented on all allotments, thus changing the existing situation on 81 percent of the planning area. The remaining 19 percent of the planning area would remain unchanged. Each grazing treatment would define the season of use and length of grazing period (see table 2-3). Vegetation on 15,900 acres would be modified by chaining, spraying, burning, plowing, and seeding, where necessary. Support facilities such as water developments and fences are also proposed to facilitate grazing treatments, better distribute water for big game, and protect riparian habitat (see table 2-2).

Changes in vegetation resulting from the above actions will be quantified in the assessment of this alternative as they relate to changes in range condition, trend, vegetation production, and the effect of grazing on the riparian vegetation.

Vegetation Production and Composition

Level of Use. Overutilization (utilization averaging 60 to 80 percent) of vegetation is currently a problem on 63 percent of the planning area (portions of 80 allotments) and is the result of a level of use that has exceeded the range's carrying capacity. (See Appendix IV-2 for the methodology used to predict changes in vegetation production and range condition.) This is shown by poor and fair range condition and declining trend. (See Appendix I-1 for range condition and trend by allotment.) It is well documented that overutilization (utilization averaging in excess of 50 percent for range plants) on an annual basis weakens and eventually destroys plants by causing a loss of carbohydrate reserves (Stoddart et al., 1975; McIlvanie, 1942), losses of live root mass (Cook, 1966), and reducing plant vigor as measured by herbage weight and seed stalk production (Mueggler, 1975).

Reducing the degree of average annual utilization of key plant species to 50 percent or less would improve plant vigor. Qualitative improvements in plant vigor are indicated by a normal completion of the life cycle, the number of leaves and seed stalks of grasses, or the general appearance of the plants (Braun-Blanquet, 1932; Kneebone and Cremer, 1955; and Cook et al., 1958). The vegetation in the planning area would respond quickly to the proposed reduction in average annual utilization. Improvement in plant vigor would be the first result of the proposed changes and would be an important factor in improving range condition and trend (Johnson, 1965; Pechanec, 1954; Short and Woolfolk, 1956; Weaver and Darland, 1947). As the vigor of the perennial grasses and shrubs improved, more seed would be produced and more seedlings would become established.

Under this alternative, big game use would increase a predicted 37 percent, nearly equaling the proposed 40-percent livestock reduction. This proportion of big game to livestock use would, in the long term, cause some change in vegetation composition. More utilization would be made on browse and less on grasses. The change would be toward more perennial grass, fewer annual weeds (i.e., mustard, Russian thistle, and cheatgrass), and greater species diversity. There would tend to be fewer shrub seedlings (i.e., bitterbrush and true mountain mahogany) since these compete poorly with grasses (Frischknecht et al., 1979). This gradual change would, in part, be due to reduced early and late spring use. Big game would return to higher summer range in late winter or early spring and would not use public lands during critical periods of plant growth and reproduction, thus reducing the impact to vegetation.

The improvements in plant vigor and reproduction due to the reductions in utilization and initial level of use would have a positive effect on range condition and vegetation production. The effect would be areawide, with measureable increases in vegetation production continuing until good condition was reached. This would be expected to occur within the 20-year planning period after the alternative was fully implemented. The magnitude of change in vegetation production directly attributable to the proposed reduction in utilization cannot be clearly separated from the increases that would come from implementing grazing treatments, but is estimated by range specialists to be about 5,212 AUMs.

Grazing Treatments. Of the 90 allotments in the planning area, 73 are grazed every year by livestock in the spring and 27 of these are also used by big game during the same period. In general, too heavy, too early, and too frequent removal of herbage has resulted in a marked decline in the vigor of range plants in the planning area. Studies conducted (C. Wayne Cook, 1971) in western Utah on ranges similar to those in the planning area have shown that there is an interrelationship between season of use and intensity of harvesting vegetation by grazing. These studies found, without exception, that excessive spring grazing reduced twig length in browse and number of seed stalks in grasses and caused a larger portion of the plants to die in each species. Clipping in the spring caused about 89 percent more death loss of plants and about 54 percent greater crown reduction in living plants than other seasons of harvesting. There were no significant differences among the average death losses from fall, early winter, and late winter harvesting. The adverse effects of spring grazing can be reduced or eliminated by implementing grazing treatments that alternate or defer use during this critical plant growth and reproduction period (Hormay, 1970). Currently, there are no allotments in the planning area where spring use is rotated, alternated, or deferred.

This alternative proposes that the 90 allotments be combined into 59 allotments and treatment 1 (no spring grazing) be initiated on three allotments (10,360 acres); treatment 2 (spring rest 1 out of 4 years) be initiated on 23 allotments (347,909 acres); treatment 3 (limit spring use) be initiated on one allotment (599 acres); treatment 4 (spring use to enhance browse production) be initiated on eight allotments (28,645 acres); and treatment 5 (same as present use) be continued on 15 allotments (94,512 acres).

In this alternative, 14 allotments would not be grazed by livestock initially (79,076 acres); however, in the long term, five of the 14 allotments would be grazed and nine (17,947 acres) would remain ungrazed (table 2-3).

The grazing treatment action and season-of-use changes proposed would provide for vegetation rest from grazing during critical plant growth periods. This would improve vegetation composition, increase vegetation production, and

improve condition and trend on 85 percent of the planning area. Keng and Merrill (1960) found that when grazing treatments were implemented, as proposed in treatment 2, vegetation production increased at least 25 percent within 20 years. Dillion (1958) found that vegetation production increased as much as 100 percent on similar ranges. The rest provided to vegetation by the proposed grazing treatments would increase production approximately 10,651 AUMs within 20 years. Improvement in composition, condition, and trend could also be expected to occur within 20 years after treatments were implemented.

Vegetation Modification. Past heavy grazing, along with several years of drought, have adversely modified the natural vegetation in the planning area. This has resulted in much of the area being dominated by pinyon-juniper (41 percent, 211,200 acres) and sagebrush (42 percent, 203,284 acres). (See Appendix II-3 for acres of type and vegetation composition by allotment.)

Pinyon pine, Utah juniper, and sagebrush are present in the potential range vegetation (Ralphs and Busby, 1979). Overgrazing has reduced many desirable species, and fire prevention has stopped natural succession. Sagebrush has increased in the planning area to where it totally dominates much of its potential range. Pinyon and juniper have increased in density and encroached upon sagebrush and bunchgrass communities.

This alternative proposes vegetation modification in pinyon-juniper and sagebrush types by chaining, burning, plowing, spraying with herbicide (2,4-D), and drilling or interseeding with well adapted productive plant species (see table 2-2).

The results from each of these methods of vegetation modification are well documented. Vallentine (1974) states that the overall benefits from vegetation modification are in the form of increased quantity and quality of forage, reduced fire hazard, increased water yield, controlled erosion, and reduced conflicts between livestock and big game on the various rangeland resources.

In this alternative, approximately 2 percent (3,250 acres) of the sagebrush community would be modified by chaining, plowing, seeding, spraying, and burning, and 6 percent (12,650 acres) of the pinyon-juniper community would be modified by chaining and seeding. The total vegetation modification would occur on 3 percent (15,900 acres) of the total planning area. Vegetation modification would be given ample protection from livestock grazing (approximately 2 years) to ensure seedling establishment and success of the project.

The amounts and kinds of vegetation modifications proposed are given below along with a brief analysis of the expected changes in forage production and vegetation composition. These analysis are based on results from areas having similar vegetation types, climate, and soil. The exact amount of change in composition from pinyon-juniper and sagebrush to other woody shrubs (browse), forbs, and grasses is not predicted because of the wide variation in range site potential. Vegetation modifications are identified only by allotment and not by range site; therefore, only the broad direction of change in composition is predicted.

1. Chaining on 10,080 acres:

   In the short term, reductions of up to 90 percent of pinyon-juniper and sagebrush have been obtained from once-over treatments, but 50- to 70-percent reductions are more common (Pechanec et al., 1965).

In 1973 the Forest Service (FS) on the adjoining Fishlake National Forest lands showed that annual net usable forage gained from chaining sagebrush and pinyon-juniper sites was 0.30 AUMs per acre. Similar results could be expected in the planning area, with production predicted to be increased by 3,024 AUMs. Composition is predicted to change initially from pinyon-juniper and sagebrush to more desirable forage grass and browse species.

2. <u>Plowing and seeding on 250 acres:</u>

In 1950 pastures in Benmore and Eureka, Utah were plowed and seeded with several species of wheatgrass. Average forage production was increased from 190 to 1,148 lbs. per acre, or about an increase of 1 AUM per acre between the years 1956 and 1964 (Cook, 1966). Similar results would be expected in the planning area. Plowing and seeding on 250 acres would produce an increase of 250 AUMs. Composition would be changed from sagebrush to more desirable grass and browse species.

3. <u>Browse interseeding on 2,570 acres:</u>

Browse interseeding is the planting of shrub seedlings by hand or the planting of seeds by a rangeland drill. No pertinent literature is available which investigates the increases in forage production that could be expected from such a project in the planning area. However, it is the opinion of BLM range conservationists that planting such shrubs as bitterbrush and four-wing saltbush could increase vegetation production by 180 lbs. of air dried forage per acre. In this alternative, 2,570 acres would be treated and an increase of 591 AUMs would be produced. The predicted change in composition would be toward more desirable browse species. Existing composition would be improved by interspaces being filled with browse plants.

4. <u>Spraying on 1,200 acres:</u>

The spraying proposed under this alternative would be aerial application of the herbicide 2,4-D.

Spraying 2,4-D can produce a reduction of big sagebrush ranging from 67 to 100 percent (Blaisdell and Mueggler, 1956). This releases moisture and nutrients for forage production. Cook (1966) applied herbicides to mixed stands of big sagebrush and rabbitbrush at four locations in Utah ranging in elevation from 5,200 to 6,500 feet (similar to the planning area). Prior to treatment, the experimental plots had a 20- to 40-percent cover of brush and were producing from 430 to 800 lbs. of air dried forage (mainly grasses) per acre. Following spraying, forage yields varied from 800 to 1,500 lbs. of air dried material per acre. This modification would produce an increase of approximately 720 AUMs by spraying, or about 500 lbs. of air dried forage per acre (an increase of 0.6 AUMs per acre). Composition would be predicted to change from 40 to 50 percent big sagebrush to 10 percent sagebrush with more grasses and browse species.

5. Prescribed burning on 600 acres:

Sagebrush burning conducted by Pechanec et.al. (1965) in Clark and Fremont Counties of southeastern Idaho in areas that had a good understory of perennial grasses and weeds (similar to the planning area) showed that, within 4 years after burning, the grazing capacity had increased about 85 percent; after 15 years, the grazing capacity was still 60 percent higher, or about 0.5 AUMs per acre, than on unburned ranges. Similar results are expected in the planning area, and vegetation is expected to produce 300 additional AUMs on the burned sites. Composition of vegetation is predicted to change from predominantly a sagebrush type to a grass-browse-forb range.

6. Contour furrowing and seeding on 1,200 acres:

Contour furrowing is done to reduce erosion and retain water. Water retention results in an increased amount of moisture being available to plants. This increased moisture affects plant vigor and phenology, helps to establish and sustain seedlings, and provides a favorable environment which is conducive to production of a substantial seed source from indigenous plant species (Wein and West, 1971). Studies by Fisser, Mackey, and Nichols (1974) conducted on rangelands comparable to those in the planning area have shown that, even under adverse conditions, herbage production over a 10-year period can increase from 412 to 590 lbs. per acre on contour furrowed and seeded sites. Contour furrowing and seeding in the planning area would produce an increase of 100 AUMs in the long term. Composition would not be altered from the present situation, with the exception of grasses, which would become more abundant on disturbed furrow areas.

The combined effects of the vegetation modifications on vegetation would be to increase production by 4,985 AUMs in the long term.

Riparian Vegetation

Generally, riparian vegetation begins growth earlier in the spring and continues growth later in the fall than most upland range vegetation in the planning area. During this time, riparian plants are more palatable than dried range plants and are actively sought by cattle (Platts and Rountree, 1972). Because of this, vegetation in meadows and along streams is more susceptible to overgrazing. It should be understood that grazing along riparian areas at any level by cattle is detrimental to riparian vegetation.

Studies by Duff (1978), Hormay (1970), and others have shown that fencing improves the riparian vegetation, and improvement to good condition can be expected in about 4 years. On allotments where livestock is not allowed to graze, the same improvements could be expected. The class or type of animal allowed to graze along the riparian areas determines the degree of improvement expected. For example, on areas where sheep are allowed to graze, damage or deterioration is not as great as on areas where cattle are allowed to graze. This is because sheep do not weigh as much, do not prefer riparian vegetation, have different grazing habits (do not favor water areas), and are generally herded to water then driven away to graze. Duff and Robinson (1980) indicate that riparian vegetation could improve where only sheep are allowed to use riparian zones.

This alternative proposes that 20 miles (244 acres) of the estimated 40 miles (488 acres) of riparian vegetation be fenced to exclude livestock. Those areas presently fenced along Otter Creek would be excluded from grazing by adding 0.5 mile of fence. Duff (1978) has shown that within 4 years after completion of the fencing, there should be as much as a 63-percent improvement in the condition of this riparian vegetation. The improvement would show an increased number of cottonwood and willow saplings and improvement in undercut or overhanging streambanks. The remaining 20 miles of riparian habitat would remain unfenced; however, it is located in sheep grazing allotments or in no livestock grazing allotments. There would be some improvement expected in this riparian vegetation under reduced livestock use.

Vegetation Condition and Trend

The effects of reduced utilization on range condition and trend cannot be clearly separated from the effects of implementing the proposed level of use, grazing treatments, range developments, or reduced grazing on riparian areas. Therefore, this analysis assesses the combined effects of these changes on vegetation.

The combined effects of reduction in utilization and implementation of grazing treatments in conjunction with the 15,900 acres of proposed vegetation modifications and support facilities (water troughs, spring developments, etc.) would improve plant vigor, composition, density, and reproduction. Vegetation production would be increased by at least 20,848 AUMs. This improvement is referenced under the Vegetation Production and Composition section of this alternative. Accelerated plant growth, reproduction, and plant vigor are elements in determining range condition; thus, the improvements expected would indicate that current declining trends would be reversed. This, in turn, would cause improvement in range condition from poor to fair on 32,200 acres, and from fair to good on 280,748 acres within a 20-year period. All ranges presently in good condition (186,988 acres) would remain in their present condition.

Summary

As the utilization of vegetation under this alternative is reduced from heavy (60 to 80 percent) to moderate (50 percent or less), plant vigor would improve and promote increased key plant growth and reproduction.

Changes in levels of use, grazing treatments, and/or vegetation modification would be combined to provide an increase in AUMs from 47,835 in the initial term to 68,683 in the long term. As vegetation production was increased, range conditions would also improve from fair to good and from poor to fair. Riparian vegetation would be improved in the fenced areas (244 acres, 20 miles).

Currently, vegetation produces 38,268,000 lbs. of air dried forage (47,835 AUMs) in the planning area. It is predicted that within 20 years after all proposed changes have been implemented and range developments completed, 54,946,400 lbs. of air dried forage (68,683 AUMs) would be produced. This amount of forage exceeds the amount currently produced by 16,678,400 lbs. (20,848 AUMs). The end result is a range productivity increase of about 0.04 AUMs per acre.

Unavoidable Adverse Impacts

There would be no unavoidable adverse impacts to the range vegetatio..

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Because vegetation is a product of the range that produces year after year, utilization at the levels proposed in this alternative would allow for the short-term maintenance and enhancement of the vegetation resource. Also, in the short term, there would be losses from vegetation modification on 15,900 acres. However, in the long term, after implementing the grazing treatments, continuing the level of use proposed, and completing vegetation modification proposed on 15,900 acres, this alternative would produce 20,848 more AUMs annually than are currently produced.

Irreversible or Irretrievable Commitment of Resources

There are no irreversible commitments of the vegetation resource. There would be an annual irretrievable consumption of vegetation by big game and livestock and a short-term irretrievable commitment of pinyon-juniper, sagebrush, and other plant species caused by the 15,900 acres of proposed vegetation modification.

Conclusion

Implementation of this alternative would be beneficial to vegetation on 70 percent (347,909 acres) of the planning area. Vegetation production would increase and range condition and trend would improve. On the remaining 30 percent (152,063 acres) of the planning area, vegetation production would improve slightly over current conditions, and there would be a longer time period (over 20 years) required for improvement of condition and trend.

ANALYSIS OF IMPACTS TO SOILS UNDER ALTERNATIVE A

Introduction

The soil would be affected by changes in ground cover, soil surface disturbance, soil compaction, and water infiltration. These factors all influence the erosion rate and sediment yield. Changes to the soil occur either directly or indirectly through changes in the vegetation resource. For example, increases in levels of use directly affect the soil by increasing livestock trampling, which results in soil compaction and heavier plant utilization which, in turn, decreases vegetation ground cover.

Decreases in soil erosion generally follow vegetation production increases and improvement in range conditions. Due to the strong interrelationship of soil disturbance and soil compaction, water infiltration, and ground cover, they have not been divided into individual sections but will be discussed together. The cumulative effect of these changes will be analyzed as they relate to sediment yield and soil erosion. Specific values for the anticipated changes in soil erosion cannot be determined because of a lack of suitable predictive models and the large number of variables such as climatic factors encountered under field conditions. Correlation of soil erosion and vegetation types in this analysis is lacking because of an absence of detailed soils information over much of the Mountain Valley Planning Area.

Soil Erosion

Present soil erosion conditions are: 3 percent (14,666 acres) of public lands in the planning area are in stable erosion condition; 34 percent (172,126 acres) in slight erosion condition; 51 percent (256,042 acres) in moderate erosion condition; 11 percent (55,190 acres) in critical erosion condition; and less than 1 percent (1,948 acres) in severe erosion condition. This section will discuss the effect of the proposed action on the general areas and those in severe or critical condition.

Changes in the Vegetation Resource. Vegetation production would increase and range condition would improve from poor to fair on 32,200 acres and from fair to good on 280,748 acres within a 20-year period. An improvement in the range condition and production leads to a decrease in soil erosion, although soil changes lag plant changes (USDA, National Range Handbook, 1976). Therefore, soil erosion rates are expected to decrease with improved vegetation production and range condition. All range currently in good condition (186,988 acres) would remain constant. Consequently, soil erosion rates would remain relatively slight. Range condition on 152,063 acres would improve more slowly and is not expected to change to the next higher condition class within 20 years. The soil erosion rates on those areas are expected to remain unchanged.

Level of Utilization. Utilization of vegetation would be reduced from heavy (60 to 80 percent) to moderate (50 percent or less), and plant vigor would improve promoting key plant growth and reproduction (see Vegetation section, Alternative A). Livestock trampling reduces ground cover density and increases incidents of bare soil which, in turn, allows raindrop impact to seal the soil surface and detach soil particles. This results in increased erosion (Meehan and Platts, 1978). Livestock trampling, in addition to disturbing the soil surface, causes soil compaction and destroys aboveground and underground portions of the plant, causing increases in soil erosion (Bentley et al., 1977). A decrease in utilization would decrease the amount of trampling and thus reduce soil erosion.

Grazing Treatments. Implementation of grazing treatments would improve the vegetation in the planning area (see Vegetation section, Alternative A). This would reduce sediment yield by reducing soil surface disturbance and soil compaction because of increased ground cover. Late winter and spring livestock grazing would be reduced. This is the time when grazing is most harmful to the soil since fine-textured soils are wet and, therefore, more easily compacted (Lusby, 1970).

Vegetation Modification. Vegetation modification would increase ground cover. Under this alternative, the following modifications would occur which result in impacts to soil erosion:

1. Chaining on 10,080 acres:

   No increases in sediment yield are expected in the short term. Buckhouse and Gifford (1976) studied areas in southern Utah that received this treatment and found that sediment yield did not increase if the debris were left in place. Sediment yield would be reduced further as ground cover increased in the long term. Grass and browse species would become established, which would hold the

soil in place and increase water infiltration, thus reducing soil erosion.

2. Plowing and seeding on 250 acres:

   Localized erosion does occur on plowed sites due to a reduction in plant cover in the short term (Gifford, 1972). In the long term, soil erosion would be reduced as ground cover increased. Grass and browse species would become established, which would hold the soil in place and increase water infiltration, thus reducing soil erosion.

3. Browse interseeding on 2,570 acres:

   Sediment yield is not expected to change on the sites in the short term since existing vegetation cover would not be removed and soil disturbance would be localized and minimal (Plummer et al., 1968). In the long term, sediment yield would be further reduced since the previous bare soil openings would be covered by browse, which would hold the soil in place and increase water infiltration, thus reducing soil erosion.

4. Spraying on 1,200 acres:

   Sediment yield is not expected to increase in the short term since debris would be left in place, thus leaving ground cover virtually unchanged and providing soil surface protection. In the long term, sediment yield would be further reduced as ground cover increased. Grass and browse species would become established, which would hold the soil in place and increase water infiltration, thus reducing soil erosion. Herbicide 2,4-D would be shortlived and would have no adverse effects on the soil (USDA, 1977).

5. Prescribed burning on 600 acres:

   In the short term, the area would produce a higher sediment yield than is presently produced due to a lack of ground cover and exposure to raindrop impact. As vegetation was re-established in the long term, soil erosion would decrease as ground cover and water infiltration increased.

6. Contour furrowing and seeding on 1,200 acres:

   Sediment yield would be reduced in the short term since contour furrowing reduces runoff and increases water infiltration. Increased ground cover resulting from increased soil moisture and new plants would hold soil in place and further increase water infiltration, thus reducing soil erosion in the long term.

Areas in Severe and Critical Erosion Condition. The 57,138 acres in severe and critical erosion condition create special problems in providing proper soil management. In the short term, grazing would be increased on 13,401 acres of soil in this condition, and it is expected that the current rate of soil erosion would increase. Also, in the short term, grazing would be reduced

on 23,624 acres and eliminated on 20,111 acres. The soil erosion is expected to decrease as the degree of livestock utilization is reduced. However, some of the current erosion is due to the natural environment and, therefore, controlled by the inherent nature of the soil parent material (texture and chemical properties) and not by man's activities (Bentley et al., 1977). These soils would not respond to the reduction in livestock trampling.

A total of 14,250 acres in the severe and critical erosion condition class would receive vegetation modification. Of the total 19 allotments that are in this condition, 13 would receive rest grazing treatments, and on 12 allotments the season of use would be changed to alleviate trampling damage. In the long term, soil erosion would be reduced on these acres.

Riparian Areas

As stated in the Vegetation section, riparian areas are overgrazed in cattle allotments. Although no comprehensive studies have been completed on streambank areas in the planning area, field reviews by BLM specialists indicate that these riparian areas are in a deteriorated condition. The cause/-effect relationship between vegetation and soil erosion condition has been explained in the beginning of the Soils section.

Under this alternative, 20 miles (244 acres) of riparian area in cattle allotments would be fenced to exclude cattle. This would allow vegetation vigor to increase and woody plants to become established. As the vegetation improved, sediment yield would be reduced.

Unavoidable Adverse Impacts

There would be increased short-term soil losses due to plowing (250 acres), burning (600 acres), and increasing the level of use (13,401 acres).

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Implementation of range developments and vegetation modifications would cause short-term localized soil disturbance and increased sediment yield. Enhancement of long-term productivity to the soil resource would occur through decreases in sediment yield.

Irreversible or Irretrievable Commitment of Resources

There would be an irreversible loss of soil on 14,251 acres of severe and critical soil erosion areas where soil erosion would increase. There would be an irretrievable localized loss of soil due to construction of range developments and vegetation modifications.

Conclusion

Soil erosion on 347,909 acres would decrease. On the remaining 30 percent (152,063 acres) of the planning area, soil erosion condition would remain unchanged.

ANALYSIS OF IMPACTS TO WATER RESOURCES UNDER ALTERNATIVE A

Changes in vegetation and utilization affect soil erosion rates, sediment yield, and soil compaction. These factors, in turn, affect water infiltration and water quality. Due to their strong interrelationships, these factors are discussed together.

Water Quality and Quantity

Utilization of vegetation would be reduced from heavy (60 to 80 percent) to moderate (50 percent or less) and plant vigor would improve, promoting key plant growth and reproduction. Soil erosion would decrease and sediment yield would be reduced on 90 percent in the Mountain Valley Planning Area as a result of increased soil cover and decreased soil compaction. Water runoff would decrease and infiltration would increase in the planning area (see Soil section, Alternative A). When grazing intensity decreases, water infiltration increases due to less soil compaction and less cover depletion (Meehan and Platts, 1978). This would improve the water quality of overland flow to streams flowing during spring snowmelt or during heavy rain events. Decreased water runoff allows for less energy to move sediment and bacteria (Environmental Protection Agency [EPA], 1978). As the level of livestock use is reduced, coliform bacterial pollution of streams would be reduced proportionally. However, typical rangeland cattle operations in Idaho were found to pollute streams with concentrations of coliform bacteria, depending on livestock access to the streams (Stephenson and Street, 1977, as cited in EPA, 1978). Watersheds that have high wildlife numbers have been found to produce high bacterial counts in streams (Buckhouse and Gifford, 1976).

Implementation of grazing treatments would reduce sediment yield and water runoff. This would also improve the quality of overland flow to streams.

The proposed vegetation modifications would affect water quality and quantity as follows:

1. Chaining on 10,080 acres:

   No increases in runoff are expected in the short term. Buckhouse and Gifford (1976) studied areas in southern Utah that received this treatment and found that runoff did not increase if the debris were left in place. Grass and browse species would become established in the long term, which would reduce sediment yield, thereby improving water quality and increasing water infiltration.

2. Plowing and seeding on 250 acres:

   In the short term, increased sediment yield and runoff would occur on plowed sites due to a reduction in plant cover (Gifford, 1972). Grass and browse species would become established in the long term, which would reduce sediment yield, thereby improving water quality and increasing water infiltration.

3. Browse interseeding on 2,570 acres:

   Sediment yield and surface runoff is not expected to increase on the sites in the short term since existing vegetation cover would not be removed and soil disturbance would be localized and minimal. In the

long term, sediment yield and surface runoff would be reduced since the previous bare soil spots would be covered by browse, which would hold the soil in place and increase water infiltration. This would decrease suspended solids in stream water.

4. Spraying on 1,200 acres:

   Sediment yield and surface runoff is not expected to increase in the short term since debris would be left in place, thus leaving a ground cover for the soil surface. Herbicide 2,4-D would degrade in 2 to 6 weeks and not accumulate in the soil. Therefore, the herbicide would not enter the stream system. In the long term, sediment yield and surface runoff would be further reduced as ground cover increased. Grass and browse species would become established, which would hold the soil in place and increase water infiltration. This would decrease suspended solids in stream water.

5. Prescribed burning on 600 acres:

   In the short term, the area would produce higher sediment yield and surface runoff due to a lack of ground cover. As vegetation became re-established in the long term, sediment yield would decrease and water infiltration would increase. This would decrease suspended solids in stream water.

6. Contour furrowing and seeding on 1,200 acres:

   Contour furrowing promotes water infiltration and, at the same time, reduces sediment yield. Increased ground cover from increased soil moisture and seedlings would hold soil in place and further increase water infiltration, thus reducing sediment yield in the long term (Noble, 1963). This would decrease suspended solids in stream water.

Riparian Areas

Although no comprehensive studies have been completed on streambank areas in the planning area, overutilization has left riparian areas in a deteriorated condition (see Soil section, Alternative A). Improper grazing practices in riparian zones reduce water quality, eliminate streambank shrubs, cause soil compaction, accelerate erosion, increase water temperatures, break down streambanks, and encourage bank crumbling (Thomas et al., 1979). Livestock trampling along streambanks may also increase dissolved and suspended solids carried by streams (Johnson et al., 1978). Under this alternative, 20 miles of riparian zone would be fenced, allowing vegetation to become established and water quality to improve.

Summary

Total water yield would be reduced by some range developments and livestock use. Each of the five reservoirs would entrap 1/4 to 1 acre-foot of water per year, and contour trenches and gully plugs would reduce water runoff. Livestock would consume 8,565,600 gallons per year (gal/yr) (16 acre-feet) of

water in the long term. This would be an increase of 603,000 gal/yr (1.1 acre-feet) of water that would be unavailable for other uses.

Unavoidable Adverse Impacts

Identified vegetation modifications would cause a short-term, localized decrease in water quality and increased water runoff.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Implementation of range developments and certain identified vegetation modifications would cause a short-term, localized decrease in water quality and increased water runoff. Increased stabilization of the soil, as a result of decreased utilization and vegetation modification, would result in a long-term improvement in water quality and water infiltration.

Irreversible and Irretrievable Commitment of Resources

There are no irreversible commitments of the water resource. There would be an irretrievable localized and short-term decrease in water quality due to construction of range developments and certain identified vegetation modifications. Water consumed by livestock would be lost to other uses.

Conclusion

Surface water quality would improve and water quantity would be decreased slightly.

ANALYSIS OF IMPACTS TO ANIMAL LIFE UNDER ALTERNATIVE A

Introduction

Changing the existing numbers and kinds of livestock, reducing the utilization of vegetation, implementing grazing treatments, and developing range projects are specific actions of the proposal that would cause changes to vegetation. These changes would affect terrestrial and aquatic animals by influencing the diversity, amount, and availability of food, cover, and water. In this section, the analysis of these changes in the habitat are related to the effects on current population levels of major species in the area.

Mule Deer

The present crucial habitat (winter range) for mule deer is in poor to fair condition (see Appendix III-5). Most of the winter ranges are close to being a monoculture of big sagebrush or pinyon-juniper (see Appendix II-3, table B). This condition is primarily the result of many years of changes in the vegetation by grazing and browsing animals. According to Box, Wagner, and Dwyer (1977), rangelands have experienced such a drastic change following the introduction of domestic livestock that overgrazing must be considered one of the major causes of range deterioration. The low state of productivity of these ranges is viewed by Smith, Malchek, and Fulgam (1977) as a limitation to deer production. Although populations are presently low, as habitat and forage are increased or improved, population levels are expected to expand

accordingly to meet the carrying capacity of the allocated food supply. The biological potential of mule deer is capable of expanding to meet the allocated level (Jense, 1980). Improvements in forage through changes in livestock grazing or mechanical treatment, as proposed in this alternative, would result in larger deer populations.

This alternative provides for more use of forage by big game because less would be allocated to livestock. A balance between livestock and big game is necessary to obtain optimum range conditions. According to Scotter (1980), "Both livestock and wild ungulate pressure may be necessary for balanced use of browse and herbaceous forages to maintain plant communities production for each kind of animal." The initial allocation would not exceed the vegetation available and would provide increased forage for deer use.

On eight allotments (28,645 acres) of critical deer winter range, treatment 4 (spring grazing to increase browse production) would be initiated to benefit deer. Livestock would make use of spring season grasses. Grass vigor would be held below optimum and available soil moisture would be used for browse production (Jensen et al., 1972; Frischknecht et al., 1979). The rest period would allow maximum browse production for use by big game. This increased browse would improve the habitat quality for deer.

Vegetation modification of 15,900 acres is also proposed to improve deer winter range. By chaining, burning, plowing, spraying, drilling, and interseeding this amount of rangeland, a long-term increase of 4,985 AUMs is expected to occur. Of these AUMs, 2,977 would be allocated to deer. Five water developments would provide additional sources for better distribution of these animals.

The end result for deer would be an initial increase in the available forage. There would be an increase in the deer population from 17,933 to 26,238 (an increase of 8,305 deer) and a long-term increase to 29,986 deer.

Antelope

The present habitat (yearlong range) for antelope is in poor to fair condition (see Appendix III-5). Hence, the generally low state of productivity of these ranges is viewed as a limitation to antelope production. This is primarily the result of many years of changes in the vegetation by grazing and browsing animals. It is acknowledged by most biologists that range in a subclimax state is more beneficial to antelope than one which is at a near climax state because of the diversity of food (browse, forbs, and grasses) eaten by antelope at different times of the year. Yoakum (1978) states, "Pronghorns thrive best on rangelands with diversity of vegetation, an abundance of grass-forb-browse plants with high succulence, and growth height from 38 to 61 cm."

Most of the antelope range in the planning area consists of predominantly sagebrush and/or pinyon-juniper stands (see Appendix II-3, table B). Aro (1971) states that, "heavy grazing of pinyon-juniper ranges has not only caused a decline in forage production, but has been accompanied by increases in density and extent of tree stands." Sagebrush, at least some subspecies, is valuable forage for antelope in winter, yet it is seldom needed in great abundance. Lack of plant diversity increases the direct competition for forage between livestock and antelope (i.e., when there is only one thing to eat, all animals must eat it to survive).

Because most of the ranges are dominated by sagebrush, a decreased livestock utilization would increase plant diversity . For example, Holmgren (1976) states that non-use from livestock would favor the expression of grass species. Chaining and seeding of 3,720 acres of antelope habitat would also

cause an increase in plant species and introduce species especially beneficial to antelope. Chaining would stimulate plant diversity. Soon after an area is disturbed, forbs used by antelope become re-established (Stoddard et al., 1975). Five reservoirs placed in antelope range would improve existing habitat and extend the range to other areas that have been unused because of lack of water.

The end result for antelope would be an improvement in habitat quality by increasing plant diversity and an increase in quantity by providing additional water. In the short term, there would be an increase in antelope population levels from 96 to 190 (an increase of 94) and a long-term increase to 393 antelope.

Elk

The present crucial habitat (winter range) for elk is in poor to fair condition (see Appendix III-5). Hence, the generally low state of productivity of these ranges is viewed as a limitation to elk production (Smith et al., 1977). This is primarily the result of many years of changes of the vegetation caused by grazing and browsing animals. Winter range in a subclimax state is more beneficial to elk than one which is near climax because of the diversity of food (browse, forbs, and grasses) eaten by elk at different times of the year (Kufeld, 1973).

Most of the ranges in the planning area are pinyon-juniper or big sagebrush stands (see Appendix II-3, table B). This is detrimental to elk because not enough variety is provided in their diet. While browse, at least some species, is valuable forage for elk in winter, grasses also make up a high percent of winter forage, depending on availability (Kufeld, 1973). The lack of variety also greatly increases the direct competition for forage between livestock and elk.

Reducing livestock numbers would increase plant diversity by increased vigor to plants which now are overutilized. Such plants as grasses and forbs could be expected to increase in the overall composition which currently is predominated by pinyon-juniper or sagebrush (see Appendix II-3). This increase in diversity has been known to occur with proper management of grazing animals (Holmgren, 1976). An increase in plant diversity would result in the availability of a wider variety in the elk diet. Vegetation modification of 15,900 acres would also increase the number of plant species (especially grasses and forbs) by chaining, burning, plowing, spraying, drilling, and interseeding this amount of rangeland. Five reservoirs placed in elk range would redistribute these animals and allow them to graze areas that have previously been lightly used due to lack of water. However, water is not considered to be a limiting factor on the elk winter range.

The end result for elk would be improved habitat quality and quantity in the short term. There would be an increase in the elk population from 656 to 897 (an increase of 241 more elk), and a long-term increase to 1,683 elk.

Endangered Utah Prairie Dog

The Utah prairie dog is an endangered species found only in south-central Utah. Its population declined from 100,000 individuals to only 3,300 by 1972 (Crocker-Bedford, 1976). The largest concentration of prairie dogs on public lands is on the Awapa Plateau (see Parker Mountain EIS). Part of the Cedar Grove Allotment of this planning area is on the Awapa Plateau and has a small population (one colony) of approximately 60 prairie dogs in it. This colony

has paralled the Utah population as a whole. Therefore, the following comments also refer to the Cedar Grove population. Heavy livestock grazing has caused a marked increase in shrubs at the expense of palatable grasses and forbs utilized by prairie dogs for food. This shift contributed to the decline of the Utah prairie dog. Cool season palatable forage, so essential for prairie dogs, may have suffered the largest decrease, as it is now rare in most areas that previously supported Utah prairie dogs (Crocker-Bedford, 1976). The present spring livestock use competes directly with prairie dogs for the available food supply, especially since lactation occurs during this period and needs for succulent forage are tantamount to survival for the young of the year. It is the biological opinion of the U.S. Fish and Wildlife Service (USFWS) that spring livestock use could be detrimental to the health of the endangered Utah prairie dog (see Appendix III-5b).

The proposed change in season of use (from May 26 to June 30 for sheep and May 10 to June 30 for cattle to October 6 to November 15 for both) in the Cedar Grove Allotment from spring to fall sheep use would greatly enhance the habitat by providing succulent forage for the endangered Utah prairie dog. This would occur because the fall-winter livestock use is not as detrimental to prairie dogs as is early and late spring use (Crocker-Bedford, 1976).

Fencing three transplant sites should provide a desirable habitat for reintroduction of the prairie dogs.

Sagegrouse

The limiting factor for sagegrouse in this planning area is the inability of the brood habitat to produce sufficient food except in exceptionally wet years (Jarvis, 1974).

The majority of the sagegrouse on public lands in the planning area is found in the Cedar Grove Allotment. The populations in other allotments and especially in the north end of the planning area are primarily found on private lands and are in very small numbers (see figure 3-6). Spring cattle or sheep use competes directly with sagegrouse for brooding forage, and winter livestock use on crucial winter ranges depletes sagebrush, which is used for winter food and cover by sagegrouse. Jarvis (1974), in his Parker Mountain sagegrouse research, found "that the most preferred species, longleaf phlox, was limited in its availability to sagegrouse by the grazing of domestic sheep."

The change in season of use on the Cedar Grove Allotment would be beneficial to sagegrouse found in this allotment because of a decrease in sheep-sagegrouse competition for critical succulent vegetation in spring brooding areas. This succulent forage is needed for growth and survival of broods (Jarvis, 1974). It is anticipated that improved habitat would relate to increased population levels. The impacts on other allotments are unknown, but would be expected to follow a similar trend as the Cedar Grove Allotment.

Fish and Aquatic Animals

The present fishery located in the planning area is not productive. This condition is primarily the result of overgrazing and trampling which has degraded the quality of the riparian habitat.

Livestock and wildlife grazing of riparian habitat decreases or eliminates vegetation and causes trampling of streambanks. Also, these animals regularly use valley bottoms adjacent to streams as loafing areas. These actions affect the productivity, longevity, and self-sustenance of fishing streams. Factors

necessary for a productive fishery include: streambank vegetation (cover and soil stability) and water quality (depth, velocity, oxygen content, temperature, sedimentation, bacterial concentration, and animal wastes) (Meehan and Platts, 1978).

Important habitat components for fish are temperature, cover, and stabilized streambanks. One study of brown trout showed that an increase in trout density appeared to be determined primarily by the physical environment, particulary cover (Meehan and Platts, 1978). The habitat components are provided primarily by adjacent riparian vegetation. If this important vegetation is degraded to a poor condition, the quality of the fishery habitat would also deteriorate and fish numbers would be reduced. Besides providing hiding places, Otis (1974) states that overhanging branches and grasses in the water provide natural feeding and breeding areas for terrestrial and land stage aquatic insects that appear in the diet of fish.

Under this alternative, all resource users of vegetation would be given first priority over livestock grazing. Improvement of vegetation would occur on 70 percent of the planning area. Although grazing would be only 4 percent below current use, big game would place less stress on the riparian vegetation than would livestock. Wildlife spend less time loafing inside the riparian zone, and this would reduce grazing and trampling of vegetation. Installation of five water developments would also reduce the time big game would spend along the riparian zone. Implementing spring rest (treatment 2) on 70 percent of the planning area, eliminating livestock on 15 percent, and fencing all riparian areas now grazed by cattle (244 acres or 20 miles of stream) would reduce the adverse impacts on the fishery and improve the quality of what is now considered poor fish habitat. Along with improvement in stabilized streambanks, temperature, cover, and water quality would also be improved and the size and number of fish would increase.

The actions of this proposal would provide the environment on Beaver Creek for reintroduction of Bonneville cutthroat trout. However, only 2.5 miles of that creek are on BLM-administered land, while 7 miles of headwater are on the Fishlake National Forest.

Summary

Because of the predicted increase in vegetation production, this alternative would improve big game, sagegrouse, and Utah prairie dog habitat conditions by enhancing and expanding the existing supply of food, cover, and water over the short and long terms.

The initial (short-term) allocation of vegetation to big game provided by this alternative would allow an increase of big game above the current use level. For deer, there would be an initial allocation of 22,619 AUMs (26,238 deer), which would be an increase of 7,159 AUMs (8,305 deer) above the current use level. There would be an allocation of 26,774 AUMs (31,057 deer) over the long term. For antelope, there would be an initial allocation of 238 AUMs (190 antelope), which is 118 AUMs (94 antelope) more than the current use. There would be 492 AUMs (393 antelope) available over the long term. For elk, there would be an initial allocation of 2,361 AUMs (897 elk), which would be 635 AUMs (241 elk) more than the current use. There would be 4,430 AUMs (1,683 elk) available over the long term. Sagegrouse, Utah prairie dog, and fish populations would be expected to increase; however, the amount is unquantifiable with available data.

The biological potential of all big game species is great enough to produce the number of animals to fill the carrying capacity allowed by the allocated AUMs of forage, both in the short and long terms (Jense, 1980).

The possibility of wildlife depredation on private lands could increase in some areas depending on a variety of factors (e.g., the location of private lands, the condition of the forage on the adjacent public lands, the type of forage on private lands, the amount of control measures instituted by UDWR and private landowners, etc.). It can be assumed that without the competition between livestock and big game on public lands, big game may not need to search for food on private lands except in those areas where relatively small areas of private land are surrounded by public lands.

An impact would be felt on adjoining National Forest lands. Wildlife carrying capacity of public lands would be the limiting factor for most big game animals because they supply most of the critical winter range. National Forest and/or private lands supply most of the summer range. This summer range has livestock allocations over the major portion of it. This situation could thus change the traditional role of the winter range being the limiting factor to one where that portion of the summer range allocated to wildlife could be the limiting factor for big game.

Because of the predicted large increase in big game numbers, there would be a potential for problems areawide from big game depredation and livestock-big game competition on National Forest and private lands in summer ranges and in some winter ranges.

Unavoidable Adverse Impacts

There would be no significant unavoidable adverse impacts to terrestrial or aquatic animal life.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Plowing and burning, which would completely eliminate vegetation for one year, would result in increases in forage available in the long term for animal life.

Irreversible or Irretrievable Commitment of Resources

There are no significant irreversible or irretrievable impacts to terrestrial or aquatic animal life.

Conclusion

Population levels of big game, the endangered Utah prairie dog, sage-grouse, and fish would increase.

ANALYSIS OF IMPACTS TO LIVESTOCK GRAZING UNDER ALTERNATIVE A

Introduction

Specific action items that affect livestock grazing are the levels of use proposed, allotment combinations, grazing treatments, and range developments. The level of use in the long term relates directly to the improvement in vegetation production predicted for the long term.

Utilization of vegetation (key plant species) by livestock would be reduced from the present heavy use (60 to 80 percent) to 50 percent. Initially,

livestock grazing would be eliminated on 16 percent of the Mountain Valley Planning Area. Livestock grazing would be reduced by 40 percent on 59 percent of the planning area and maintained at present levels on 25 percent of the planning area.

Initial and long-term changes in livestock grazing resulting from the action items will be expressed as they relate to impacts on the livestock industry and individual operators. However, interpretion of actual cost will be assessed in the Socioeconomics section.

Level of Use. Actual use in the planning area indicates that there has been a steady decline in the number of AUMs that livestock operators have used since about 1973 (see table 2-1 and figure 3-7).

There are 111 different livestock operators or individuals who run a total of 167 different livestock operations, each requiring a separate licensing authorization from the BLM.

If operators were required to reduce the level of use, they could respond by decreasing their herd size, buying feed, or renting pasture. If they were required to increase the level of use, they could buy livestock, raise replacement animals, or transfer part of their preference to other qualified operators.

The projected changes from actual existing AUMs used are given below by ranch category (size of operation and class of animal).

		Total for Each Ranch Category		
	Number of	AUMs	Changes in AUMs	
Ranch Category	Operators	Existing Use	Initial	Long Term
Small Sheep Operators	6	136	-57	+1
Large Sheep Operators	35	18,807	-7,169	+115
Small Cattle Operators	42	3,209	-1,257	+256
Medium Cattle Operators	14	1,506	-546	+185
Large Cattle Operators	14	4,324	-2,036	+13

Source: Appendixes II-1 and III-6.

The initial allocation would be 16,917 AUMs. Changes would be as follows:

1. Eliminate livestock use on 14 allotments, involving 2,839 AUMs. This would affect 31 different grazing operations.

2. Partially reduce livestock use on 28 allotments, involving a total of 8,226 AUMs (from 20,708 to 12,482). This would affect 78 different grazing operations.

3. The current livestock level of use (4,435 AUMs) would remain unchanged on 17 allotments; therefore, the level of use adjustments proposed by this alternative would not affect 43 livestock operations.

The long-term allocation would be 28,552 AUMs, a 69-percent increase above the initial allocation. This allocation is 2 percent above the existing allocation.

1. There would be a long-term increase in the livestock level of use from the initial 16,917 to 28,552 AUMs. This would be 570 AUMs above the existing level of 27,982 AUMs.

2. Livestock grazing privileges totaling 1,594 AUMs would be restored to 15 livestock operations on five of the 14 allotments on which grazing was initially eliminated. The long-term allocation would be 44 percent, 1,245 AUMs below the existing allocation of 2,839 AUMs.

3. On 28 allotments where the livestock level of use would be initially reduced, 7,157 of the existing 8,226 AUMs would be restored to 78 livestock operations. This is 1,069 AUMs or 13 percent fewer AUMs than are currently allocated on these allotments.

Grazing Treatments. All allotments would have grazing treatments as proposed in table 2-3. Changes in season of use would be proposed on 25 allotments and would affect 91 livestock operations. This action would necessitate changing the livestock operator's routine and grazing patterns by requiring livestock to move from pasture to pasture and, in some cases, to leave the allotment and return later. This could involve more manpower, time, and equipment.

The proposed grazing treatments and allotment combinations would:

1. Alter the operators' livestock management practices.

2. Combine 48 allotments, which would result in a total of 59 allotments. This would require new grazing treatments on 17 allotments and would affect 82 livestock operations.

3. Change the season of use on ten allotments not involved in combinations. This would affect 24 livestock operations and necessitate a change in patterns of use. This would cause coordination impacts on livestock use between private lands, public lands, and National Forest lands. There presently exists a close relationship in timing of grazing use and numbers allowed to graze among these lands. The changes proposed would affect the amount and time periods that livestock would be allowed to graze on public lands. This would, in turn, impact livestock operations and the administration of grazing on public and National Forest lands.

Allotment Combinations. Breeding programs and breeds of animals, especially cattle, would be impacted as mixed herds would result from combinations of allotments. Operators desiring to run only one breed of animal would have a problem with crossbred calves, and this would be less desirable to the operator than those of his preferred breed. In cases of purebred herds, this could be costly to six to ten operators.

Range Developments. This alternative proposes that 35 miles of fence be installed to protect 20 miles of riparian vegetation (244 acres of streambank) and exclude livestock. This action would impact 44 different livestock operations on nine allotments. The fencing could complicate or reduce the efficiency of livestock management by restricting movement across streams and limiting access to water.

The proposed range developments (vegetation modification and support facilities) would, in some cases, require a commitment of funds and resources from the livestock operator, and would also require a 2-year period of non-use following vegetation modification. Each of the range developments would cause some modification in the mode of livestock management within individual allotments. Most of the range developments would aid in livestock management by providing better quality feed, more water, and better livestock distribution. However, where vegetation was modified, the livestock operation would have to find other sources for livestock forage until the 2-year response time for vegetation improvement had been realized.

Summary

In the short term, livestock grazing would be eliminated on 14 allotments. This would involve 31 livestock operations and 2,839 AUMs. In the long term, five allotments would be restored to livestock grazing. This would involve 15 livestock operations and 1,594 AUMs. Livestock grazing would also be reduced by 8,226 AUMs on 28 allotments, affecting 78 livestock operations. In the long term, 7,157 AUMs would be restored. Initially, the number of AUMs for livestock would remain the same on 17 allotments. This would involve 43 livestock operations and 4,435 AUMs. In the long term, there would be an increase of 2,884 AUMs on those allotments. There are no allotments in this alternative where livestock grazing would be initially increased.

The mode of operation would be changed on the above allotments, with the exception of the 17 allotments where no initial changes in allocation are proposed.

Unavoidable Adverse Impacts

Livestock grazing would be adversely affected by reduced grazing on 40 percent of the planning area in the initial period. This would affect 31 different livestock operations. Ten operations would require a season-of-use change, affecting coordination with private land and National Forest use periods. There would also be a 2-year loss of grazing use following vegetation modifications on 15,900 acres.

Relationship Between Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

The specific actions required to implement this alternative would cause an initial reduction in livestock grazing. This would reduce the number of livestock on the rangeland. In the long term (20 years), there would be an increase in the grazing privileges to slightly above the initial situation. This long-term improvement would improve the livestock operators' situation and raise grazing of livestock to a stable level.

Irreversible or Irretrievable Commitment of Resources

There are no irreversible commitments made by this alternative. There would be an initial irretrievable loss of 11,065 AUMs annually affecting 109 livestock operations.

Conclusion

Reductions in allocation changes would be required in 109 of the 167 livestock operations, while 91 would be required to change their present management (seasons of use or pasture systems) to initiate grazing treatments.

Eighty-two operations on 48 allotments would be consolidated into 17 new allotments, requiring still further changes.

ANALYSIS OF IMPACTS TO RECREATION UNDER ALTERNATIVE A

Introduction

Impacts would occur to recreation when management and/or allocation would improve or degrade habitat and alter numbers of big game (deer, antelope, elk), sagegrouse available for hunting, and trout available for fishing.

The present number of big game and fish within the Mountain Valley Planning Area provides the amount of hunter-fisherman days at the rate of hunter-fisherman success. Historically, any increase in deer, antelope, elk, and sagegrouse numbers has resulted in increased hunter success, attracting more hunters to the area (as allowed by permit) and resulting in an increase in hunter days provided. Any decrease in game numbers has resulted in the opposite effect (UDWR, 1978a). It is likely that any increase in the trout population would result in increased fisherman success, attracting more fishermen to the area, and resulting in an increase in fisherman days provided. Any decrease in the trout population would have the opposite effect.

Hunter and Fisherman Success and Days

The increase in deer numbers would result in an unquantified increase in hunter success initially and over the long term. With the current hunter success ratio, the potential increase in deer numbers would provide for an increase in deer hunter days from the 19,137 hunter days currently provided to approximately 27,999 initially and approximately 32,932 hunter days over the long term (see Appendix IV-3 for methodology).

The increase in antelope numbers would result in an unquantified increase in hunter success initially and over the long term. With the current hunter success ratio, the potential increase in antelope numbers would provide for an increase in antelope hunter days from the 5 hunter days currently provided to approximately 10 hunter days initially and approximately 20 hunter days over the long term.

The increase in elk numbers would result in an unquantified increase in hunter success initially and over the long term. With the current hunter success ratio, the potential increase in elk numbers would provide for an increase in elk hunter days from the 1,164 hunter days currently provided to approximately 1,582 hunter days initially and approximately 2,968 hunter days over the long term.

The increase in sagegrouse numbers would result in an unquantified increase in sagegrouse hunter success and hunter days initially and over the long term.

The increase in trout populations would result in an unquantified increase in fisherman success and fisherman days provided by Lost Creek, Beaver Creek, Pine Creek, Otter Creek, and the Sevier River, initially and over the long term.

Summary

Alternative A would result in the following:

1. There would be an overall increase in big game hunter days from the 20,306 hunter days currently provided by the planning area to approximately 29,591 hunter days initially and 32,932 hunter days over the long term.

2. There would be an unquantified increase in sagegrouse hunter days above the present 179 hunter days currently provided by the planning area initially and over the long term.

3. There would be an unquantified increase in fisherman days provided by the planning area initially and over the long term.

Unavoidable Adverse Impacts

None.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

The overall increase in hunter and fisherman days provided by the planning area during the 20-year production period would continue into the long term.

Irreversible and Irretrievable Commitment of Resources

None.

Conclusion

There would be an overall increase in big game and sagegrouse hunter days and fisherman days provided by the planning area initially and over the long term.

ANALYSIS OF IMPACTS TO SOCIOECONOMICS UNDER ALTERNATIVE A

Introduction

In this section, the social and economic impacts of the alternative will be analyzed. This analysis will include impacts to ranch income and capital, regional economic impacts, and attitudes and expectations.

In analyzing ranch income impacts due to decreases in BLM permits, two scenarios are used: (1) feed change - the operator would maintain herd size and buy additional feed; and (2) herd change - he would reduce herd size and avoid the purchase of additional feed. However, season of use usually cannot

be increased on public lands, and data for the Mountain Valley Planning Area indicate that most operators would not have surplus feed to sell even if their permits were increased. The only way they could make increased use of public lands would be to increase their herd size and, if necessary, buy feed to support livestock while not on public lands. While consistency of analysis requires the assumption that increased allocations would be fully used, it is not likely that an operator would actually go into debt to utilize the increased allocation. This factor is particularly important in interpreting income impacts on small ranching operations. It should be noted that in some alternatives a substantial increase in Federal AUMs would result in a decrease of income for small ranching operations. It is recognized that in most situations, small ranching operations must be supplemented with another source of income.

Changes in the number of AUMs could also impact ranch capital by means of the "market value" of the permit.

This analysis attempts to quantify economic impacts to the average ranch in each category, but may not reflect actual impacts on individual ranchers.

Portions of Sanpete, Sevier, and Piute Counties are contained in the planning area. These counties and the neighboring counties of Juab, Millard, and Wayne share many geographic and economic ties. Together they comprise the Six County Economic Development District. Because of these interrelationships and the availability of data, the regional impacts will be analyzed on this six-county level.

Ranch Income and Capital

The following table summarizes the economic impacts from changed grazing levels to the various ranch categories whose present basic budgets are shown in table 3-4. The partial budgets for all ranch subcategories are listed in Appendix IV-4. These figures represent the worst case (most dollars lost relative to the current situation) from either the feed change or herd change scenarios.

Operators	Present Net Cash Income	Percent Change Net Cash Income		Percent Change in BLM Permits and Capital Value[a]	
		Initial	Long Term	Initial	Long Term
Sheep Operators					
Small (1-199)	$2,564	-18.2	0.0	-42.9	+1.0
Large (200+)	30,447	-14.4	0.0	-38.1	+0.6
Cattle Operators					
Small (1-99)	1,625	-47.0	-24.6	-39.2	+8.0
Medium (100-199)	7,785	-12.3	+8.3	-36.3	+12.3
Large (200+)	17,493	-13.9	0.0	-47.1	+0.3

Source: Appendix IV-4.

[a]Change in AUMs that would be used and their capital value.

Under this alternative, the small cattle operator under the feed change scenario would experience the most severe economic impact, with a 47-percent decrease in net cash income ($763) in the initial phase. The medium cattle operator is the only ranch category projected to show a net cash increase under this alternative, 8.3 percent ($648) in the long term. The large cattle category and both sheep categories would show significant income decreases (-13.9 percent to -18.2 percent) in the initial phase, then return to essentially their existing income levels in the long term.

Based on the magnitude of the projected income decrease in the "initial" stage, it can be assumed that some operations would cease commercial operation. However, the ability of any operator to withstand the proposed cuts depends on many variables. Those variables include: (1) amount the operator is actually cut; (2) operator's dependance upon grazing permits; (3) present economic viability of the operation; (4) personal satisfaction derived from the operation; and (5) age of the operation and availability of heirs. Therefore (based on available data), attempts to predict the number of operators who would cease commercial operation are unrealistic.

The largest estimated decrease in the capital value of a BLM permit (-47 percent) occurs to the large cattle operator. The largest increase in capital permit value (+12 percent) would occur in the medium cattle operations.

Regional Economic Impacts

Regional income, output, and employment would be impacted by: (1) changes in the local livestock industry; and (2) the number of hunters coming into the region, relative to big game herd sizes. While the magnitude of the figures representing regional impacts is small, it should be kept in mind that the region is considerably larger than the planning area. Therefore, these figures should be used for comparison between alternatives and should not be taken at face value.

Regional impacts due to changes in the livestock industry and big game hunting are presented below:

	Value and Percent Change From Existing Level					
	Total Gross Output[a]		Labor (man-years)[b]		Income[c]	
Regional Impacts	Initial	Long Term	Initial	Long Term	Initial	Long Term
Livestock Grazing	-0.3 (-1,398.4)	+0.4 (+1,777.3)	-0.4 (-55.0)	+0.5 (+67.8)	-0.2 (-272.7)	+0.3 (+373.9)
Big Game Hunting	+0.1 (+374.5)	+0.1 (+566.8)	+0.1 (+20.6)	+0.2 (+32.9)	+0.1 (-135.1)	+0.2 (+216.1)

Source: Forest Service, Regional Input/Output Model, BLM data.

[a]The total sales of each sector within the region; includes sales to consumers within the region and sales to industries and consumers outside the region (exports). Values are expressed in thousands (1,000s) of dollars.

[b]The amount of employment within the region as a whole. Values are expressed in man-years.

[c]Income earned by all households within the region (salaries, wages, profits, rents, royalties, interest, etc.). Values are expressed in thousands (1,000s) of dollars.

Initially, reductions in livestock grazing would show a moderate negative impact on the local economy while impacts from big game hunting would increase slightly. In the long term, increases in the livestock sector would recover and show significant increases. The continued positive impacts from big game hunting would be moderate.

Attitudes and Expectations

BLM analysis in the planning area disclosed that some ranchers were distrustful or had negative feelings of BLM planning and management strategies, but others were pleased and said management was good. Other variables included feelings that the BLM did not identify with rancher problems and that decisions at the land use level were too slow in implementation (BLM, URA Step 2, 1979a). Locally, negative changes in BLM livestock grazing are regarded as decision-making by distant authorities who fail to understand the effects on local residents.

Short-term negative attitudinal and lifestyle impacts would occur to livestock operators and trade centers because of reduction of grazing below existing levels on 28 allotments and elimination on 14 allotments. Some long-term recovery would soften, or partially mitigate, these short-term attitudinal impacts. This assumed decline in ranching lifestyle would decrease permit value; hence, increased difficulty in intergenerational transfer of ranch properties would occur because of uncertainty or loss of ranching attraction. Some outmigration of the younger generation population could be expected. Short-term deterioration of the relationships with the BLM would manifest itself with the threat, or actual filing, of legal actions. Short-term positive attitudinal impacts would occur to recreationists, conservationists, and preservation groups because of increases in wildlife populations.

Unavoidable Adverse Impacts

Implementation of this alternative would result in loss of ranch income and capital value. These losses could be sufficient to cause an undetermined number of ranches to cease commercial operations.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

The negative economic impact can be viewed as a short-term cost for a long-term benefit of the resources. Questions regarding equitable distribution of this economic cost are unanswered.

Irreversible or Irretrievable Commitment of Resources

Commitments of economic resources for this alternative in the form of ranch income, investment loss, or government expenditure are not irreversible before they are spent or are actually realized. Beyond that point, they are irretrievable.

Conclusion

This alternative would have an overall negative impact on ranch income. Capital value of the permits would increase for all operations in the long term. Impacts to the regional economy would be positive in the long term.

Livestock operators would experience negative attitudinal and lifestyle changes, but positive attitudinal change would be felt by recreation groups.

ALTERNATIVE B: OPTIMIZE LIVESTOCK GRAZING

ANALYSIS OF IMPACTS TO VEGETATION UNDER ALTERNATIVE B

Introduction

An initial 1-percent increase in the overall level of use (livestock and big game) is proposed by this alternative. The level of use would be reduced on 120,602 acres (24 percent), and maintained at present level on 10,938 acres (2 percent) of the Mountain Valley Planning Area. Livestock grazing would be increased on 368,432 acres (24 percent of the area). The existing 90 allotments would be combined to form 59 allotments, and grazing treatments would be implemented on all allotments. The season of use would be changed on 82 percent of the planning area. Vegetation would be modified where necessary on 38,475 acres by chaining, spraying, burning, plowing, and seeding. Riparian vegetation along 40 miles of stream (488 acres) would be grazed except where presently protected by management fencing. (See tables 2-1, 2-2, and 2-3 for more detail of proposed alternative actions.)

Vegetation Production and Composition

Level of Use. As discussed in Alternative A, overutilization is currently a problem in the planning area. Reducing the level of use would improve the range vegetation sufficiently so that livestock use could increase 10 percent by implementing this alternative. Big game use would be reduced 15 percent.

The magnitude of change in forage production directly attributable to the proposed reduction in vegetation utilization is expected to be increased by approximately 6,473 AUMs. The proposed proportion of livestock to big game use would cause some changes in vegetation composition in the long term. More utilization would be made on grass and less on browse (Hormay, 1970). This would have the opposite effect of Alternative A and would favor browse, annual weeds, and fewer perennial grass species (Harper, 1969). This change in composition would be, in part, due to the change in level of livestock use.

Grazing Treatments. This alternative proposes that the 90 allotments be combined into 59 allotments and treatment 1 (no spring grazing) be initiated on 5 allotments (18,589 acres); treatment 2 (spring rest 1 out of 4 years) be initiated on 25 allotments (373,805 acres); treatment 3 (limit spring use) be initiated on 1 allotment (599 acres); treatment 4 (spring use to enhance browse production) be initiated on 8 allotments (28,645 acres); and treatment 5 (continue present use) be initiated on 20 allotments (86,217 acres) (See table 2-3).

The magnitude of change in vegetation production directly attributable to the proposed grazing treatments is predicted to be an increase of about 5,389 AUMs. The grazing action proposed above would provide rest to vegetation during critical plant growth periods on 75 percent of the planning area. This would improve vegetation composition and diversity much the same as discussed in Alternative A.

Vegetation Modification. This alternative proposes vegetation modification in pinyon-juniper and sagebrush types by means of chaining, burning, plowing, spraying with herbicide 2,4-D, and drilling or interseeding with well adapted productive plant species (see table 2-2). Approximately 6 percent (12,400 acres) of the sagebrush community would be modified by chaining, plowing,

seeding, spraying, and burning, and 13 percent (26,075 acres) of the pinyon-juniper community would be modified by chaing and seeding. The total vegetation modification would involve 8 percent (38,475 acres) of the entire planning area.

The amounts and kinds of vegetation modification proposed are given below with a brief analysis of the expected increases in vegetation production and composition change. The exact amounts of change in composition from pinyon-juniper and sagebrush to other woody shrubs (browse), forbs, and grasses cannot be predicted because of variation in the range sites.

1. <u>Chaining on 26,075 acres:</u>

   Similar results as described in Alternative A (0.30 AUMs/acre) could be expected in the planning area, with production predicted to show an increase of 7,823 AUMs. Composition is predicted to change initially from pinyon-juniper and sagebrush to more desirable forage grass and browse species.

2. <u>Plowing and seeding on 250 acres:</u>

   Similar results to those in Alternative A (about 1 AUM/acre) would be expected in the planning area. Plowing and seeding on 250 acres in this area would produce an increase of 250 AUMs. Composition would be changed from dominant sagebrush to more desirable sage and browse species.

3. <u>Browse interseeding on 1,075 acres:</u>

   In this alternative, 1,075 acres would be treated for an increase of 247 AUMs. This increase is the same as discussed in Alternative A (about 0.23 AUMs/acre). The change predicted in composition would favor more desirable browse. Existing composition would be improved by interspaces being filled with browse species.

4. <u>Spraying on 4,205 acres:</u>

   This modification would produce increases similar to those discussed in Alternative A (approximately 2,523 AUMs, about 500 lbs. of air dried forage per acre, or 0.6 AUMs increase per acre). Composition is predicted to change from predominantly 40 to 50 percent sagebrush to 10 percent sagebrush and more grasses and browse species.

5. <u>Prescribed burning on 4,670 acres:</u>

   Similar results are expected as those predicted in Alternative A (about 0.5 AUMs per acre) and vegetation is expected to produce 2,335 additional AUMs on the burned sites. Composition of vegetation is predicted to change initially from predominantly a sagebrush type to a grass-browse-forb range.

6. <u>Contour furrowing and seeding on 2,200 acres:</u>

   Contour furrowing and/or seeding on the planning area would produce an increase of 1,100 AUMs in the long term. This is about the same

as those results discussed in Alternative A (about 0.5 AUMs/acre). Composition would not be altered from the present situation except grasses would become more abundant on disturbed furrow areas.

The combined effect of the vegetation modifications on vegetation would be to increase production by 14,028 AUMs in the long term.

Riparian Vegetation

Generally, riparian vegetation begins growth earlier in the spring and continues growth later in the fall than most upland range vegetation in the planning area. During this time, riparian plants are more palatable than dried range plants and are actively sought by cattle (Platts and Rountree, 1972). Because of this, vegetation in meadows and along streams is more susceptible to overgrazing. Studies conducted by Platts and Rountree (1972) and Eckert (1975) question whether riparian vegetation can be restored on previously overgrazed pastures through the use of grazing treatments. Grazing may modify the natural succession of riparian vegetation. According to Hormay (1970), heavy grazing prevents the natural replacement of woody riparian species (i.e, old cottonwoods by younger trees in riparian zones). Armour (1977) quotes Hormay as stating in a personal communication that, "Vegetation in meadows and drainage ways is closely utilized under any stocking rate or system of grazing." Where this is the case, the only way to preserve or improve riparian values is to completely fence the area. Reducing livestock or adjusting grazing seasons will not usually solve the problem.

This alternative proposes that none of the riparian vegetation be fenced to exclude livestock. As riparian vegetation is grazed by livestock, it would continue to be overutilized.

The initial and long-term proposed increases in livestock, especially cattle, would keep the riparian vegetation in its present condition. Production would continue at its present reduced level, and the riparian vegetation would remain in its deteriorated condition.

Vegetation Condition and Trend

Changes in the proposed level of use, grazing treatments, vegetation modifications, and riparian vegetation each affect range condition and trend. Therefore, this analysis assesses the combined effects of these changes on vegetation.

As the utilization of vegetation under this alternative is reduced from heavy (60 to 80 percent) to moderate (50 percent or less), plant vigor would improve and promote increased key plant growth and reproduction.

The reduction in utilization (6,473 AUMs) and implementation of grazing treatments (5,389 AUMs), in conjunction with the 38,475 acres of proposed vegetation modification (14,028 AUMs) and support facilities (water troughs, spring developments, etc.), would increase the vegetation production in the planning area by 25,890 AUMs.

Declining trend would be reversed as a result of improved plant vigor, change in composition, and accelerated growth and reproduction. This, in turn, would improve range condition from poor to fair on 32,200 acres, or from fair to good on 280,748 acres within a 20-year period. All ranges currently in good condition (186,988 acres) would remain in their present condition.

Summary

Currently, vegetation produces 38,268,000 lbs. of air dried forage (47,835 AUMs) in the planning area. It is predicted that within 20 years after all proposed changes have been implemented and range developments completed, 58,980,000 lbs. of air dried forage (73,725 AUMs) will be produced. This amount of forage exceeds the amount currently produced by 20,712,000 lbs., for an increase of 25,890 AUMs. The end result is a range productivity increase of about 0.05 AUMs per acre.

Changes in levels of use, grazing treatments, and/or vegetation modification would provide an increase in AUMs from 47,835 in the initial term to 73,725 in the long term. As vegetation production is increased, range conditions would also improve from fair to good and from poor to fair. Range trend is expected to improve areawide with the implementation of Alternative B.

Unavoidable Adverse Impacts

There would be no unavoidable adverse impacts to the range vegetation.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

The actions necessary to implement this alternative would cause an initial increase in the rangeland vegetation. Over a period of 20 years, the improvements in the vegetation resource, production, and condition would substantially increase the quality and productivity of rangeland.

Irreversible or Irretrievable Commitment of Resources

There are no irreversible commitments of the vegetation resource. There would be an annual irretrievable consumption of vegetation by big game and livestock and a short-term irretrievable commitment of pinyon-juniper, sagebrush, and other plant species caused by the 38,475 acres of proposed vegetation modification.

Conclusion

Implementation of this alternative would be beneficial to vegetation on 75 percent (373,805 acres) of the planning area. Vegetation production would increase and range condition and trend would improve. On the remaining 25 percent (126,167 acres) of the area, vegetation production would increase over the current situation, but range condition would not be expected to reach the next condition class within 20 years.

ANALYSIS OF IMPACTS TO SOIL UNDER ALTERNATIVE B

Introduction

The soil would be affected by changes in ground cover, soil surface disturbance, soil compaction, and water infiltration. These factors all influence the erosion rate and sediment yield. Changes to the soil occur either directly or indirectly through changes in the vegetation resource. For example, increases in levels of use directly affect the soil by increasing livestock trampling, which results in soil compaction and heavier plant utilization which, in turn, decreases vegetation ground cover.

Decreases in soil erosion generally follow vegetation production increases and improvement in range conditions. Due to the strong interrelationship of soil disturbance and soil compaction, water infiltration, and ground cover, they have not been divided into individual sections but will be discussed together. The cumulative effect of these changes will be analyzed as they relate to sediment yield and erosion rates. Specific values for the anticipated changes in soil erosion cannot be determined because of a lack of suitable predictive models and the large number of variables such as climatic factors encountered under field conditions. Correlation of soil erosion condition and vegetation types in this analysis is inadequate because of the need for detailed soils information over much of the Mountain Valley Planning Area.

Soil Erosion

Changes in the Vegetation Resource. Implementation of this alternative would be beneficial to vegetation on 75 percent (373,805 acres) of the planning area. Vegetation production would increase and range condition and trend would improve. As discussed in Alternative A analysis, an improvement in vegetation would mean more soil cover to decrease raindrop impact and more root development to decrease soil compaction and increase water infiltration. All of these factors would lead to a decrease in soil erosion. An improvement in range condition leads to a decrease in soil erosion, although soil changes always lag plant changes (USDA, National Range Handbook, 1976).

Range condition would improve from poor to fair on 32,200 acres and from fair to good on 280,748 acres within a 20-year period. All range currently in good condition (186,988 acres) would remain constant. Consequently, the soil erosion rates would remain relatively slight. Range condition on 152,063 acres would improve more slowly and is not expected to change to the next higher condition class within 20 years. The soil erosion rate is expected to remain unchanged.

Level of Utilization. Utilization of vegetation would be reduced from heavy (60 to 80 percent) to moderate (50 percent or less) and plant vigor would improve, promoting key plant growth and reproduction. Soil erosion would be reduced because of the addition of vegetation litter and cover to the soil surface.

Grazing Treatments. On the balance of the planning area, implementation of grazing treatments and vegetation modification would also lead to improved range condition. This would cause soil erosion to be reduced due to greater soil surface cover, less soil compaction, and greater water infiltration (for a detailed discussion see Soils section, Alternative A).

Vegetation Modification. Vegetation modification would not cause adverse impacts to the soil in the short term, except for plowing on 250 acres and prescribed burning on 4,670 acres. In the long term, beneficial results to the soil are expected from all vegetation modification as ground cover and vegetation production increase, thus causing additional protection to the soil.

Areas in Severe and Critical Erosion Condition. The 57,138 acres in severe and critical erosion condition create special problems for proper soil management. In the short term, grazing would be increased on 47,588 acres of soil

in this condition, and it is expected that the current soil erosion rate would further deteriorate. Also, in the short term, grazing would be reduced on 8,974 acres. These soil erosion rates could remain unchanged or improve as the degree of livestock trampling is reduced. However, some of the current situation is due to the inherent nature of the soil parent material, and the soil would not respond to the reduction in livestock trampling.

A total of 19,750 acres in the severe and critical erosion class would receive vegetation modification. Soil erosion would be reduced on these acres. Of the total 19 allotment which are in this condition, 13 would receive rest grazing treatments, thus alleviating adverse effects.

Riparian Areas

Most soils in riparian areas are currently eroding. None of the riparian vegetation would be fenced to exclude livestock. The initial and long-term increases in livestock, especially cattle, would maintain soil erosion at its present rate.

Unavoidable Adverse Impacts

There would be short-term soil losses due to plowing and prescribed burning.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Implementation of range developments and plowed or burned sites would cause short-term localized soil disturbance and increased sediment yield. Enhancement of long-term productivity to the soil resource would occur as a result of increased stabilization of the soil.

Irreversible or Irretrievable Commitment of Resources

There would be an irreversible loss of productive soil on areas where heavy erosion is allowed to continue. There would be an irretrievable localized loss of soil due to construction of range developments and sites which are plowed or burned.

Conclusion

Soil erosion would be reduced on 75 percent (373,805 acres) of the planning area. On the remaining 25 percent (126,167 acres), improvements only slightly above current conditions could be expected.

ANALYSIS OF IMPACTS TO WATER RESOURCES UNDER ALTERNATIVE B

Introduction

Changes in vegetation and utilization affect soil erosion rates, sediment yield, and soil compaction. These factors, in turn, affect water infiltration and water quality. Due to their strong interrelationship, these factors are discussed together.

Water Quality and Quantity

Utilization of vegetation would be reduced from heavy (60 to 80 percent) to moderate (50 percent or less) and plant vigor would improve, promoting key plant growth and reproduction. Soil erosion classes would generally improve in the Mountain Valley Planning Area as a result of increased soil cover and decreased soil compaction. Water runoff would decrease and infiltration would increase in the planning area. This would reduce the amount of sediment that would reach streams from overland flow during spring snowmelt or heavy rain events. However, with increased livestock use, coliform bacterial counts would probably not be reduced, and unacceptable limits could be reached.

Implementation of grazing treatments would reduce sediment yield and water runoff. This would also improve the quality of overland flow to streams.

Vegetation modification would not bring about adverse impacts to the water in the short term, except for plowing on 250 acres and prescribed burning on 4,670 acres. In the long term, beneficial results to the water are expected from all vegetation modifications (for a detailed discussion see Water Resources section, Alternative A).

There are no comprehensive studies completed on streambank areas in the planning area; however, it is expected that overutilization has left riparian areas in a deteriorated state (see Water Resources section, Alternative A). None of the riparian vegetation would be fenced to exclude livestock. The initial and long-term increases in livestock, especially cattle, could keep the stream condition in its present poor state. This would further reduce water quality, eliminate streambank shrubs, increase soil compaction, accelerate erosion, increase water temperatures, break down streambanks, and increase dissolved and suspended solids.

Livestock would consume 15,927,000 gal/yr (30 acre-feet) of water in the long term. This would be an increase of 7,964,400 gal/yr (15 acre-feet) of water that would be unavailable for other uses.

Unavoidable Adverse Impacts

Identified vegetation modifications would cause a short-term localized increase in sediment yield and increased water runoff.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Implementation of range developments and certain identified vegetation modifications would cause a short-term localized increased sediment yield and increased water runoff. Increased stabilization of the soil, as a result of decreased utilization and vegetation modification, would result in a long-term improvement in water quality and water infiltration.

Irreversible and Irretrievable Commitment of Resources

There are no irreversible commitments of the water resource. There would be an irretrievable localized and short-term decrease in water quality due to construction of range developments and certain identified vegetation modifications. Water consumed by livestock would be lost to other uses.

Conclusion

Surface water quality would improve. The lack of fencing on riparian areas and increases in livestock use could keep the stream condition in its present poor state.

ANALYSIS OF IMPACTS TO ANIMAL LIFE UNDER ALTERNATIVE B

Introduction

Changing the existing numbers and kinds of livestock, regulating the utilization of vegetation, implementing grazing treatments, and developing range projects (especially 127 miles of livestock management fences) are specific actions of the proposal that would cause changes to vegetation. These changes would increase production and improve composition (i.e., pinyon-juniper areas would be changed to more desirable grass and browse forage species). However, riparian vegetation would remain in a deteriorated condition. These changes in vegetation would affect terrestrial and aquatic animals by influencing the diversity, amount, and availability of food, cover, and water. The construction of 127 miles of fence would affect big game animals by causing direct death loss and limiting space. The analysis of these changes in habitat and how they relate to each affected species is discussed below.

Mule Deer

As discussed in Alternative A, deer winter ranges are in poor and fair condition and deer numbers are presently low. This alternative would increase livestock utilization and decrease big game utilization of vegetation. It would require an initial reduction of 2,896 deer from the current level and also require that numbers be kept 535 deer below the current level over the next 20 years.

Livestock would make more use of spring season grasses, which would cause grass vigor to be held below optimum and available soil moisture to be used for browse production (Jensen et al., 1972; Frischknecht, 1979). The proposed level of livestock use would provide more browse production for use by big game. This increased amount would improve the quality of the habitat for deer.

Vegetation modification of 38,475 acres by chaining, burning, plowing, spraying, drilling, and interseeding would increase available forage by 14,028 AUMs. However, none of this forage would be allocated to big game. Thirty-four water developments would provide additional sources of water for better distribution of big game animals. Even though vegetation would be improved, the majority of the forage would be used by increased livestock numbers; thus, the carrying capacity would be overobligated unless deer numbers were reduced.

Generally, range developments can benefit wildlife; however, the installation of 127 miles of livestock management fences on the area would cause some disruption of deer movement. Even if fences were properly designed and constructed to wildlife standards, some deer would be entangled, hurt, or maimed. The extent of this loss cannot be determined.

The end result for deer would be an overall improvement in habitat quality. However, a deer reduction program would be needed since, in the short term, deer AUMs would be cut from 15,460 (17,933 deer) to 12,874 (14,934 deer), a decrease of 2,586 AUMS (2,999 deer); and, in the long term, deer AUMs would remain 461 AUMs (535 deer) below the current level. This deer reduction

program would be carried out by UDWR in accordance with procedures described in the level of use section of Chapter 2.

Antelope

Alternative A points out that antelope habitat is in poor and fair condition. The proposed livestock utilization would favor more browse, annual weeds, and fewer perennial grasses (see Vegetation section). Chaining and seeding of 11,180 acres in allotments where antelope are found would cause an increase in plant species and introduce species more beneficial to antelope. The vegetation modification projects would stimulate plant diversity. Soon after an area is disturbed, forbs used by antelope become re-established (Stoddard et al., 1975). Nineteen water developments placed in antelope range would improve existing habitat and extend the range to other areas that have been previously unused because of lack of water. Twenty miles of fence in allotments used by antelope would cause similar problems to those mentioned in deer above.

The end result for antelope would be an improvement in habitat quality by increased plant diversity and an increased availability of water. However, in the short term, there would not be an increase in antelope AUMs because any increase in available carrying capacity would be taken by increased livestock numbers. There would be 7 antelope AUMs available in the long term, for an increase of six antelope over 20 years. Essentially, this alternative would impose a static situation for antelope.

Elk

The present crucial habitat (winter range) for elk is in poor and fair condition. Increasing the livestock numbers would be detrimental to elk because of direct competition for available forage (Kufeld, 1973). Vegetation modification of 38,475 acres would increase the number of plant species by chaining, burning, plowing, spraying, and interseeding. Forty-three water developments placed in elk range would redistribute these animals and allow them to graze areas that have previously been lightly used. Some problems with elk movement (mostly young animals) would result from installation of 127 miles of fence.

The end result for elk would be an overall improved habitat quality and quantity. However; in the short term, there would be a decrease in available elk AUMs from 1,726 to 1,664 (a decrease of 24 elk) since the increased carrying capacity of the range would be allocated for increased livestock numbers. There would be an increase of 272 elk AUMs over the long term, for a 20-year increase of 107 elk. All variables considered, this alternative would cause a static situation for elk.

Endangered Utah Prairie Dog

Fencing two habitat sites would provide a desirable environment for reintroduction of prairie dogs on Plateau and New Otter Creek Allotments. The proposed season of livestock use and increase in number of livestock in the Cedar Grove Allotment would deteriorate the habitat of the endangered Utah prairie dog. This would occur since early and late spring livestock use is detrimental to prairie dogs, causing them to be less effective in providing milk to their young (Crocker-Bedford, 1976). It is the biological opinion of the USFWS that spring livestock use on Parker Mountain could be detrimental

to the health of the endangered Utah prairie dog (see Appendix III-5b). This habitat deterioration could cause an unquantifiable loss of prairie dogs or prevention of population growth.

Sagegrouse

The season of use and increase in the number of livestock in the Cedar Grove Allotment (where the majority of sagegrouse and the only identified strutting grounds are located), would be detrimental to sagegrouse found in this allotment. There is a sheep-sagegrouse competition for critical succulent vegetation in spring brooding areas which are usually located within close proximity to strutting grounds (Jarvis, 1974). This succulent forage is needed for growth and survival of broods. It is anticipated that deteriorated habitat would result in decreased population levels; however, the amount of decrease is unquantifiable with existing data.

Fish and Aquatic Animals

See Alternative A for discussion of fish and aquatic habitat.

Under this alternative, livestock grazing would be increased, as would the total production of vegetation. This increase would be due to water developments, vegetation modification, grazing treatments, and changes in season of use.

Habitat components important for fish are provided primarily by adjacent riparian vegetation. An increase in grazing use would place additional stress on riparian vegetation. To what degree this would affect the fish population is difficult to assess since only 16 of the total 40 miles of perennial streams contain fish. These streams are stocked at different times with different amounts each year on a "put-and-take" basis. Many of the streams are of poor quality at the present time and natural reproduction is minimal. Water quality and fishing habitat would deteriorate over a 20-year period. Because of the poor condition of many existing streams and the small amount of fish habitat in the planning area, this alternative would not change the fishery to any great extent; however, fish populations could be expected to have an unquantifiable decrease.

Summary

Because of the predicted changes in vegetation production, this alternative could improve big game habitat conditions by enhancing and expanding the existing supply of food, cover, and water over the short and long terms. However, the proposed increase in livestock numbers would require an immediate deer and elk reduction program. Deer numbers would remain below current levels, but elk would be allowed to increase slightly. The proposed continuation of spring grazing and the increase in livestock numbers in the Cedar Grove Allotment would cause direct competition between livestock, the endangered Utah prairie dog, and sagegrouse. Antelope numbers would be allowed to remain essentially the same for the short and long terms.

The construction of 127 miles of fence in the planning area would also have a detrimental effect on all species of terrestrial wildlife, except possibly the Utah prairie dog. (It is the opinion of most biologists that, even if fences are built to new "wildlife standards", they cause undue hardships and death [Bowden, 1979].)

For deer, there would be an initial allocation of 12,874 AUMs (14,934 deer), which would be a decrease of 2,586 AUMs (2,999 deer) below the current use level. There would be a long-term allocation of 14,999 AUMs (17,398 deer), which is 535 deer less than the current population. For antelope and elk, there would be no significant change from the current populations. Sagegrouse, Utah prairie dog, and fish populations would be expected to decrease.

Unavoidable Adverse Impacts

This alternative would result in a big game reduction program and losses of fish, sagegrouse and the endangered Utah prairie dog habitat and numbers.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

The short-term and long-term impacts to sagegrouse, the endangered Utah prairie dog, and riparian areas (fish habitat) are expected to be detrimental, resulting in long-term losses of these animals. Short- and long-term allocations of AUMs to wildlife would require that big game populations be kept below their biotic potential for a given habitat area. Short- and long-term use of riparian zones would require that fish species be kept below their biotic potential.

Irreversible and Irretrievable Commitment of Resources

There are no significant irreversible impacts to terrestrial or aquatic animal life. Short-term irretrievable commitments would include some small animal mortality caused by the range development activities and the loss of big game animals as a result of the reduction program.

Conclusion

In the short term, population levels of big game (except antelope), the endangered Utah prairie dog, sagegrouse, and fish would decrease. No significant increase would be allowed in the long term.

ANALYSIS OF IMPACTS TO LIVESTOCK GRAZING UNDER ALTERNATIVE B

Introduction

Specific action items which affect livestock grazing are the levels of use, proposed changes in allocation, allotment combinations, grazing treatments, and range developments. The level of use in the long term relates directly to the improvement in vegetation production predicted for the long term.

Utilization of vegetation (key plant species) by livestock would be reduced from the present heavy use (60 to 80 percent) to 50 percent. Elimination of livestock grazing is not proposed in this alternative. Livestock grazing, however, would be reduced by 25 percent on 120,602 acres (24 percent of the Mountain Valley Planning Area); maintained at present levels on 10,938 acres (2 percent of the planning area); and increased by 32 percent on 368,432 acres (74 percent of the planning area).

Changes in livestock grazing resulting from the action items will be assessed as they relate to impacts on the livestock industry and individual operators.

Level of Use. Actual use in the planning area indicates that there has been a steady decline in the number of AUMs that livestock operators have used since about 1973 (see table 2-1 and figure 3-7).

There are 111 different livestock operators or individuals who run a total of 167 different livestock operations, each requiring a separate licensing authorization from the BLM.

In this alternative, the projected changes from actual AUMs used are given below by ranch category (size of operation and class of animal).

Ranch Category	Number of Operators	Total for Each Ranch Category: AUMs Existing Use	Changes in AUMs: Initial	Changes in AUMs: Long Term
Small Sheep Operators	6	136	+25	+94
Large Sheep Operators	35	18,807	+2,244	+11,393
Small Cattle Operators	42	3,209	+91	+3,590
Medium Cattle Operators	14	1,506	+117	+2,040
Large Cattle Operators	14	4,324	+652	+4,862

Source: Appendixes II-1 and III-6.

The implementation of Alternative B would cause the following:

1. An initial 10-percent increase from 27,982 to 31,111 AUMs in the overall livestock level of use.

2. An initial livestock reduction on 19 allotments, involving a loss of 3,466 AUMs. This would affect 33 different grazing operations.

3. The current livestock level of use (80 AUMs) would remain unchanged on 3 allotments.

4. There would be a long-term increase in the livestock level of use from the initial 31,111 to 53,090 AUMs. This would be an increase of 25,108 AUMs above the existing level of 27,982 AUMs.

Grazing Treatments. All allotments would have grazing treatments as proposed in Appendix II-1, table B. Changes in season of use are proposed on 34 allotments and would affect 112 livestock operations.

The proposed grazing treatments such as allotment combinations and reduced spring use would:

1. Alter the operators' livestock management practices.

2. Combine 48 allotments into 17 allotments, thus resulting in a total of 59 allotments. This would affect 82 livestock operations.

3. Change the season of use on 15 allotments not involved in combinations. This would affect 36 livestock operations, necessitate a change in patterns of use, and cause coordination impacts with private and National Forest lands.

Range Developments. The proposed range developments (vegetation modification and support facilities) would, in some cases, require a commitment of funds and resources by the livestock operator, and also require a 2-year period of non-use following vegetation modification. Each of the range developments would cause some modification in the type of livestock management within individual allotments. However, most of the range developments would aid in livestock management by providing higher quality feed, more water, and better livestock distribution.

Summary

Livestock grazing would not be eliminated on any allotments. Initially, livestock grazing would be reduced 3,466 AUMs on 19 allotments, affecting 34 livestock operations. In the long term, there would be an increase from 10,432 to 15,080 AUMs in these same allotments. Initially, the number of AUMs for livestock would be increased 6,595 AUMs on 37 allotments and would involve 121 livestock operations. In the long term, there would be an increase of 17,307 livestock AUMs affecting the same operators.

Unavoidable Adverse Impacts

Livestock grazing would be adversely affected by reduced grazing on 19 allotments in the initial period. This would affect 34 different livestock operations. Thirty-four operations would require a season-of-use change, affecting coordination with private land and National Forest use periods. There would be a 2-year loss of grazing use following vegetation modification on 38,475 acres.

Relationship Between Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

The actions required to implement this alternative would cause an initial increase in livestock grazing and would increase the value of rangeland to several livestock operations. In the long term, the continued increase in livestock numbers and improved management would improve the livestock operators' situation and make livestock grazing more stable as an industry and livelihood.

Irreversible or Irretrievable Commitment of Resources

There are no irreversible or irretrievable commitments of resources made by this alternative.

Conclusion

Initially, 34 of the 167 different livestock operations would sustain a 25-percent reduction in grazing privileges; however, in the long term, all of these operators would receive an increase in grazing privileges from the present situation. Four operators would not be affected by the proposed changes. Initially, 129 livestock operations would receive a 28-percent increase in use. Season-of-use changes would affect 118 livestock operations initially and in the long term; 82 operations would be consolidated on 17 allotments.

ANALYSIS OF IMPACTS TO RECREATION UNDER ALTERNATIVE B

Introduction

Impacts would occur to recreation when management and/or allocation would alter numbers of deer, antelope, elk, and sagegrouse available for hunting and trout available for fishing as explained in Alternative A.

Hunter and Fisherman Success and Days

The potential decrease in deer numbers would result in an unquantified decrease in hunter success initially and over the long term. With the current hunter success ratio, the potential decrease in deer numbers would provide for a decrease in deer hunter days from the 19,137 hunter days currently provided to approximately 15,835 hunter days initially and approximately 17,449 hunter days over the long term.

There would be no change in antelope hunter success or antelope hunter days provided by the Mountain Valley Planning Area initially or over the long term.

The initial decrease and long-term increase in elk numbers would result in an unquantified decrease in hunter success initially, and an unquantified increase in hunter success over the long term. With the current hunter success ratio, the potential change in elk numbers would provide for an initial decrease in elk hunter days from the 1,164 hunter days currently provided to approximately 115 hunter days. Over the long term, there would be an increase to approximately 1,339 hunter days.

The decrease in sagegrouse numbers would result in an unquantified decrease in sagegrouse hunter success and hunter days provided by the planning area initially and over the long term.

The continued reduction in trout populations would result in an unquantified decrease in fisherman success and fisherman days provided by Beaver Creek, Pine Creek, Lost Creek, Otter Creek and the Sevier River, initially and over the long term.

Summary

Alternative B would result in the following:

1. There would be an overall decrease in big game hunter days from the 20,306 hunter days currently provided by the planning area to approximately 16,955 hunter days initially and 18,793 hunter days over the long term.

2. There would be an unquantified decrease in sagegrouse hunter days provided by the planning area initially and over the long term.

3. There would be an unquantified decrease in fisherman days provided by the planning area initially and over the long term.

Unavoidable Adverse Impacts

There would be an overall decrease in big game hunter days, sagegrouse hunter days, and fisherman days provided by the planning area initially and over the long term.

Relationship Between Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

The decrease in hunter and fisherman days provided by the planning area during the 20-year production period would continue into the long term.

Irreversible and Irretrievable Commitment of Resources

None.

Conclusion

There would be an overall decrease in big game and sagegrouse hunter days and in fisherman days provided by the planning area, initially and over the long term.

ANALYSIS OF IMPACTS TO SOCIOECONOMICS UNDER ALTERNATIVE B

Introduction

In this section, the social and economic impacts of the alternative will be analyzed. This analysis will include impacts to ranch income and capital, regional economic impacts, and social impacts.

In analyzing ranch income impacts due to changes in BLM permits, two scenarios are used: (1) feed change; and (2) herd change. However, the only way ranchers could make increased use of permits would be to increase their herd size and, if necessary, buy additional feed. Changes in the number of AUMs could also impact ranch capital by means of the "market value" of the permit. This analysis attempts to quantify economic impacts to the average ranch in each category, but may not reflect actual impacts to individual ranchers.

Sanpete, Sevier, Piute, Juab, Millard, and Wayne Counties share many geographic and economic ties. Together they comprise the Six County Economic Development District. Data for this district will be analyzed to project regional income, output, and employment.

Ranch Impacts. The following table presents a "worst case" summary of the economic impacts to the various ranch categories, shown as percentage changes from present levels. (The partial budgets for all ranch categories are listed in Appendix IV-4.)

Operators	Present Net Cash Income	Percent Change to Net Cash Income		Percent Change in BLM Permit and Capital Value	
		Initial	Long Term	Initial	Long Term
Sheep Operators					
Small (1-199)	$2,564	+16.3	+75.8	+16.2	+81.1
Large (200+)	30,447	+6.4	+67.9	+6.8	+71.9
Cattle Operators					
Small (1-99)	1,625	-2.0	-384.0	-2.1	+120.5
Medium (100-199)	7,785	-2.0	+83.2	-5.6	+145.9
Large (200+)	17,493	-3.2	+206.6	-10.9	+121.1

Source: Appendix IV-4.

Under this alternative, the small cattle category would experience the most severe income impact, showing a net loss of 384 percent ($6,248) in the long term. This would occur as a result of a 120-percent increase in allocation and the assumption that he would increase his herd to make use of this increase. (See Socioeconomics section, Alternative A.) The magnitude of this loss indicates that the existing base operation of the average small cattle rancher cannot tolerate such a large increase in herd size without a substantial increase in costs. The large cattle category is projected to show the greatest net increase of 206.6 percent ($18,654.00) in the long-term.

The largest estimated decrease in the capital value of a BLM permit (-10.9 percent) would occur in the large cattle category, and the largest increase in capital permit value (+145.9 percent) would occur in the medium cattle category.

Regional Impacts

Regional impacts due to changes in the livestock industry and big game hunting are presented below:

	Value and Percent Change From Existing Level					
	Total Gross Output[a]		Labor[b]		Income[b]	
Regional Impacts	Initial	Long Term	Initial	Long Term	Initial	Long Term
Livestock Grazing	+0.1 (+292.2)	+0.6 (3,210.5)	+0.1 (+11.1)	+0.8 (+122.4)	+0.1 (+61.5)	+0.6 (+675.5)
Big Game Hunting	<0.1 (-68.3)	<0.1 (-34.9)	<0.1 (-4.6)	<0.1 (+2.4)	<0.1 (-28.9)	<0.1 (-14.8)

Source: FS and BLM.

[a]Value in thousands (1,000s) of dollars.

[b]Value in man years.

Impacts due to changes in livestock grazing are indicated as positive in both short and long-term phases. These impacts are the most positive of any of the alternatives, except Alternative F, which would be equally positive.

Regional impacts due to change in wildlife are negligible.

Attitudes and Expectations

Long-term positive attitudinal and lifestyle impacts would occur to medium and large scale livestock operators because of improvements in vegetation characteristics and increases in livestock on 74 percent of the Mountain Valley Planning Area. Short- and long-term negative attitudinal and lifestyle impacts would occur to small scale livestock operators because of the cost inability to increase herd sizes. Short- and long-term negative impacts would generate a negative attitude from recreationists and conservationists because of site visibility changes as allotments gradually emphasized a culturally dominated landscape. These site visibility changes would be regarded as a positive impact by livestock operators.

Unavoidable Adverse Impacts

In the short term, there would be an economic loss to cattle operators which would result in negative attitudes.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Because this alternative would improve the range resource, the relationship between short-term use and long-term productivity is positive.

Irreversible and Irretrievable Commitment of Resources

Commitment of economic resources in the form of private investment or government expenditure is not irreversible before they are actually spent. Beyond that point, they are irretrievable.

Conclusion

This alternative would have a significant long-term increase in annual ranch income, with increases shown in almost every category. Capital value of permits would also increase. Regional economic impacts would be positive.

This alternative would provide short- and long-term benefits to the majority of livestock operators, but would negatively impact recreationists.

ALTERNATIVE C: RANGELAND MANAGEMENT RECOMMENDATION

ANALYSIS OF IMPACTS TO VEGETATION UNDER ALTERNATIVE C

Introduction

An initial 1-percent increase in the overall level of use (livestock and big game) is proposed by this alternative. The level of use would be reduced on 25 percent (121,920 acres), maintained at present levels on 2 percent (10,938 acres), and increased on 73 percent (367,114 acres) of the Mountain Valley Planning Area. Grazing treatments would be implemented on all allotments. The existing 90 allotments would be combined to form 59 allotments. This would necessitate altering the season of use by livestock on 83 percent of the planning area.

Vegetation would be modified on 40,270 acres by chaining, spraying, burning, plowing, and seeding, where necessary. The riparian area would be protected by 6 miles of fencing (73 acres) to eliminate livestock grazing and by management fencing for partial protection (see table 2-3).

Changes in vegetation resulting from the above action items will be quantified in the assessment of this alternative as they relate to changes in range condition, trend, and vegetation production. The effect of grazing on the riparian area will also be assessed.

Vegetation Production and Composition

Level of Use. The proportion of livestock to big game, grazing treatments, and level of use proposed under this alternative would cause some change in vegetation composition in the long term. The change would be toward more perennial grasses and shrubs and fewer annual weeds (i.e., mustard, Russian thistle, and cheatgrass). This change would occur since non-native annuals cannot compete with native perennials when grazing management is designed to favor the growth and reproduction of native plants, as proposed by this alternative. As discussed in Alternative A, this change would occur as a result of limiting utilization to 50 percent of key plant species and season-of-use changes favoring plant growth and reproduction.

The magnitude of change in forage production directly attributable to the proposed reduction in utilization of vegetation is expected to be increased by about 3,503 AUMs in the long term.

Grazing Treatments. This alternative proposes that the 90 allotments be combined into 59 allotments and treatment 1 (no spring grazing) be initiated on five allotments (16,563 acres); treatment 2 (spring rest 1 out of 4 years) be initiated on 26 allotments (374,405 acres); treatment 3 (limit spring use) be initialed on one allotment (599 acres); treatment 4 (spring use to enhance browse production) be initiated on nine allotments (21,526 acres); and treatment 5 (same as present use) be continued on 18 allotments (86,879 acres) (see table 2-3). As discussed in further detail in Alternative A, the proposed grazing treatments would provide vegetation rest from grazing during critical plant-growth periods, thus improving plant production and development on about 78 percent of the planning area. The change in vegetation production directly attributable to the proposed grazing treatments is predicted to increase by about 2,942 AUMs in the long term.

Vegetation Modification. This alternative proposes vegetation modification in pinyon-juniper and sagebrush types by means of chaining, burning, plowing, spraying with herbicide 2,4-D, and drilling or interseeding with well adapted productive plant species (see table 2-2). Approximately 7 percent of the sagebrush community (13,895 acres) would be modified by chaining, plowing, seeding, spraying, and burning, and 13 percent of the pinyon-juniper community (26,375 acres) would be modified by chaining and seeding. The total vegetation modification would occur on 8 percent (40,270 acres) of the total planning area.

The amounts and kinds of proposed vegetation modification are given below with the amount of increase in forage production and composition change that is expected to occur. The exact percent of change in composition from pinyon-juniper and sagebrush to other woody shrubs (browse), forbs, and grasses cannot be predicted because of the extreme variation in the range sites. For a more thorough discussion of each vegetation modification action, see the analysis in Alternative A. Also, Appendix II-1, table C shows the range development program by allotment for this alternative.

1. Chaining on 26,375 acres:

   Chaining on pinyon-juniper and sagebrush would produce similar results as those described in Alternative A (about 0.30 AUMs per acre). Production would be predicted to show an increase of 7,913 AUMs over the long term. Composition is predicted to change initially from pinyon-juniper and sagebrush to more desirable forage grass and browse species.

2. Plowing and seeding on 250 acres:

   The results from plowing in this alternative would be similar to those discussed in Alternative A (about 1 AUM per acre). Thus, the area is expected to produce an increase of 250 AUMs in the long term. Composition would be changed from dominant sagebrush to more desirable grass and browse species.

3. Browse interseeding on 2,570 acres:

   In this alternative, 2,570 acres would be treated and an increase of 591 AUMs would be produced. The change would be the same as expected in Alternative A (about 0.23 AUMs per acre). The change predicted in composition would be toward more desirable browse species. Existing composition would be improved by interspaces being filled with more browse plants.

4. Spraying on 4,205 acres:

   This vegetation modification would produce increases similar to those discussed in Alternative A (about 0.6 AUMs per acre). This increase would be 2,523 AUMs over the long term, and composition would be changed from more predominant sagebrush to 10 percent or less with increased grass and browse species.

5. Prescribed burning on 4,670 acres:

   Burning results are expected to be similar to those discussed in Alternative A (about 0.5 AUMs per acre). Increased production would be 2,335 AUMs over the long term, and composition of vegetation is expected to change initially from predominantly a sagebrush type to a grass-browse-forb range.

6. Contour furrowing and seeding on 1,200 acres:

   Contour furrowing and seeding would produce similar results in this alternative as those discussed in Alternative A (about 0.5 AUMs per acre). This modification is expected to increase vegetation production by 600 AUMs in the long term. Composition would change somewhat, especially in areas where contour furrows are seeded. More abundant grass species would be expected along furrowed areas; otherwise, the present overall composition is not expected to change.

The combined effect of the vegetation modifications on vegetation would be to increase production by 14,212 AUMs in the long term.

Riparian Vegetation

This alternative proposes that 6 miles (73 acres) of the estimated 40 miles (488 acres) of riparian vegetation be fenced to exclude livestock. Where possible, fencing necessary to implement pasture systems would be done parallel to riparian areas to control access by livestock. Within 4 years after completion of the fencing, there should be marked improvement in the condition of riparian vegetation (see Alternative A). The improvement would show an increased number of cottonwood and willow saplings and improvement in streambank condition. There would be no improvement in the condition of unfenced riparian vegetation. For a more detailed discussion, see Alternative B.

Vegetation Condition and Trend

Changes in the proposed levels of use, implementation of grazing treatments, and vegetation modification each affect range condition and trend, including the condition of the riparian vegetation. Therefore, this analysis assesses the combined effects of these changes upon vegetation.

As the utilization of vegetation under this alternative is reduced from heavy (60 to 80 percent) to moderate (50 percent or less), plant vigor would improve and promote increased key plant growth and reproduction. In addition to reducing the degree of utilization of vegetation on the planning area, grazing treatments would be implemented.

The reduction in utilization (3,503 AUMs) and implementation of grazing treatments (2,942 AUMs), in conjunction with the 40,270 acres of proposed vegetation modification (14,212 AUMs) and support facilities (water troughs, spring developments, etc.), would improve the vegetation production in the planning area by 20,657 AUMs.

Declining trend would be reversed as a result of improved plant vigor and accelerated growth and reproduction. This, in turn, would improve range condition from poor to fair on 32,200 acres, or from fair to good on 280,784 acres within a 20-year period. All ranges currently in good condition (186,988 acres) would remain in their present condition.

Summary

Currently, vegetation produces 38,268,000 lbs. of air dried forage (47,835 AUMs) in the planning area. It is predicted that within 20 years after all proposed changes have been implemented and range developments completed, 54,793,600 lbs. of air dried forage (68,492 AUMs) would be produced. This amount of forage exceeds the amount currently produced by 16,525,600 lbs. (20,657 AUMs). The end result is a range productivity increase of about 0.04 AUMs per acre.

Changes in levels of use, grazing treatments, and/or vegetation modification would provide an increase in AUMs from 47,835 in the short term to 68,492 in the long term. As vegetation production increased, range conditions would also improve from fair to good and from poor to fair. The riparian vegetation would likewise improve, especially in the fenced areas (6 miles, 73 acres). Improvement in the riparian areas where management fences would be placed is also expected. Range trend is expected to improve areawide with the implementation of Alternative C.

Unavoidable Adverse Impacts

There would be no unavoidable adverse impacts to the range vegetation.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

The actions necessary to implement this alternative would cause an initial improvement in rangeland vegetation. Over a period of 20 years, the improvements in the vegetation resource, production, and condition would substantially improve the quality of rangeland forage.

Irreversible or Irretrievable Commitment of Resources

There are no irreversible commitments of the vegetation resource. There would be an annual irretrievable consumption of vegetation by big game and livestock and a short-term irretrievable commitment of pinyon-juniper, sagebrush, and other plant species caused by the 40,270 acres of proposed vegetation modification.

Conclusion

Implementation of this alternative would be beneficial to vegetation on 75 percent (374,405 acres) of the planning area. Vegetation production would increase and range condition and trend would improve. On the remaining 25 percent (125,567 acres) of the area, vegetation production would improve only slightly and there would be a longer period required for improvement of range condition and trend than the 20-year time frame.

ANALYSIS OF IMPACTS TO SOIL UNDER ALTERNATIVE C

Introduction

The soil would be affected by changes in ground cover, soil surface disturbance, soil compaction, and water infiltration. These factors all influence the erosion rate and sediment yield. Changes to the soil occur

either directly or indirectly through changes in the vegetation resource. For example, increases in levels of use directly affect the soil by increasing livestock trampling, which results in soil compaction and heavier plant utilization which, in turn, decreases vegetation ground cover.

Decreases in soil erosion generally follow vegetation production increases and improvement in range conditions. The effect of changes will be analyzed as they relate to erosion class. Specific values for the anticipated changes in soil erosion cannot be determined because of a lack of suitable predictive models and the large number of variables such as climatic factors encountered under field conditions. Correlation of soil erosion condition and vegetation types in this analysis is incomplete because of a lack of detailed soils information over much of the Mountain Valley Planning Area. Another item of concern which does not affect the overall analysis is the riparian areas.

Soil Erosion

Changes in the Vegetation Resource. Implementation of this alternative would be beneficial to vegetation on 75 percent (373,805 acres) of the planning area. Vegetation production would increase and range condition and trend would improve. As has previously been discussed, an improvement in vegetation would mean more soil cover to decrease raindrop impact and more root development to decrease soil compaction and increase water infiltration. All of these factors would lead to a decrease in soil erosion. An improvement in range condition leads to a decrease in soil erosion, although soil changes always lag plant changes (USDA, National Range Handbook, 1976).

Range condition would improve from poor to fair on 32,200 acres, and from fair to good on 280,748 acres within a 20-year period. An improvement in the range condition leads to a decrease in soil erosion, although soil changes lag plant changes. All range currently in good condition (186,988 acres) would remain constant. Consequently, the soil erosion rates would remain relatively slight. Range condition on 125,567 acres would improve more slowly and is not expected to change to the next higher condition class within 20 years. The soil erosion rate is expected to remain unchanged since changes in it lag changes in range condition.

There would be a change toward more perennial grasses and shrubs and fewer annual weeds. Grasses and shrubs have a more extensive root system than annual weeds; therefore, they (grasses and shrubs) would hold the soil in place better and promote water infiltration, which would result in less soil erosion.

Level of Use. Utilization of vegetation would be reduced from heavy (60 to 80 percent) to moderate (50 percent or less) and plant vigor would improve, promoting key plant growth and reproduction. The decrease in the level of use would decrease the amount of trampling and, thus, reduce soil erosion.

Grazing Treatments. Implementation of grazing treatments and vegetation modification would also lead to improved range condition. This would cause soil erosion to decrease due to greater soil surface cover, less soil compaction, and greater water infiltration (for a detailed discussion see Soils section, Alternative A).

Vegetation Modification. Vegetation modification would not cause adverse impacts to the soil in the short term, except for plowing on 250 acres and prescribed burning on 4,670 acres. In the long term, beneficial results to

the soil are expected from all vegetation modification (for a detailed discussion see Soils section, Alternative A).

Areas in Severe and Critical Erosion Condition. The 57,138 acres in severe and critical erosion condition create special problems for proper soil management. In the short term, grazing would be increased on 47,588 acres of soil in this condition, and it is expected that the current soil erosion rate would further deteriorate. Also, in the short term, grazing would be reduced on 8,974 acres. The soil erosion condition is expected to improve as the degree of livestock utilization is reduced. However, some of the current situation is due to the inherent nature of the soil parent material, and the soil would not respond to the reduction in livestock trampling.

A total of 15,695 acres in the severe and critical erosion class would receive vegetation modification. Soil erosion would be reduced on these acres. Of the total 19 allotments that are in this class, 14 would receive rest grazing treatments, and on 12 allotments the season of use would be changed to alleviate adverse impacts from trampling damage.

Riparian Areas

Most soils in riparian areas are currently eroding (for a detailed discussion see Soils section, Alternative A). Six miles of riparian vegetation would be fenced to exclude livestock. Within 2 to 3 years after completion of the fencing, there would be a marked improvement in the condition of riparian vegetation. There should also be a marked improvement in the soil. No improvement in the soil erosion rate would occur on the unfenced riparian areas.

Unavoidable Adverse Impacts

There would be a short-term soil loss due to plowing and prescribed burning.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Implementation of range developments and certain identified vegetation modifications would cause short-term localized soil disturbance and increased sediment yield. Enhancement of long-term productivity to the soil resource would occur through increased stabilization of the soil.

Irreversible or Irretrievable Commitment of Resources

There would be an irreversible loss of productive soil on areas where heavy erosion is allowed to continue. There would be an irretrievable localized loss of soil due to construction of range developments and certain identified vegetation modifications.

Conclusion

Soil erosion would decrease on 75 percent (373,805 acres) of the planning area. On the remaining 25 percent (126,167 acres), improvements only slightly above current conditions could be expected as soil erosion rates lag improvements in range condition.

ANALYSIS OF IMPACTS TO WATER RESOURCES UNDER ALTERNATIVE C

Introduction

Changes in vegetation and utilization affect soil erosion rates, sediment yield, and soil compaction. These factors, in turn, affect water infiltration and water quality. Due to their strong interrelationship, these factors are discussed together.

Water Quality and Quantity. Utilization of vegetation would be reduced from heavy (60 to 80 percent) to moderate (50 percent or less) and plant vigor would improve, promoting key plant growth and reproduction. Soil erosion classes would improve and sediment yield would be reduced in the Mountain Valley Planning Area as a result of increased soil cover and decreased soil compaction. Water runoff would decrease and infiltration would increase in the planning area. This would improve the water quality of overland flow to streams that would occur during spring snowmelt or heavy rain events. As utilization is reduced, coliform bacterial counts would be reduced, but unacceptable limits could still be reached (for a detailed discussion see Water Resources section, Alternative A).

Implementation of grazing treatments would reduce sediment yield and reduce water runoff (see Soils section, Alternative A). This would also improve the quality of overland flow to streams.

Vegetation modification would not cause adverse effects to the water in the short term, except for plowing on 250 acres and prescribed burning on 4,670 acres. In the long term, beneficial results to the water are expected from all vegetation modifications.

Riparian Areas. Although no comprehensive studies have been completed on streambank areas in the planning area, it is expected that overutilization has left riparian areas in a deteriorated state. Six miles of riparian vegetation would be fenced to exclude livestock. Within 2 to 3 years of fencing, there would be a marked improvement in the stream condition. On areas not fenced, the stream condition would remain in its present poor state. This would further reduce water quality, eliminate streambank shrubs, increase soil compaction, accelerate erosion, increase water temperatures, break down streambanks, and increase dissolved and suspended solids.

Livestock would consume 10,908,900 gal/yr (20.6 acre-feet) of water in the long term. This would be an increase of 2,946,300 gal/yr (5.5 acre-feet) of water that would be unavailable for other uses.

Unavoidable Adverse Impacts

Identified vegetation modifications would cause a short-term localized decrease in water quality and increase water runoff.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Implementation of range developments and certain identified vegetation modifications would cause short-term localized increased sediment yield and increased water runoff. Enhancement of long-term productivity to the water resource would occur as a result of increased stabilization of the soil and decreased utilization.

Irreversible and Irretrievable Commitment of Resources

There are no irreversible commitments of the water resource. There would be an irretrievable localized and short-term decrease in water quality due to construction of range developments and certain identified vegetation modifications. Water consumed by livestock would be lost to future uses.

Conclusion

Water infiltration and quality of overland runoff would improve as a result of reduced utilization and improved vegetation and soil conditions. The lack of fencing of riparian areas (except for 6 miles) could reverse water quality improvements in streams or keep the stream condition in its present poor state.

ANALYSIS OF IMPACTS TO ANIMAL LIFE UNDER ALTERNATIVE C

Introduction

Changing the existing numbers and kinds of livestock, reducing the utilization of vegetation, implementing grazing treatments, and developing range projects are specific actions of the proposal that would cause changes to vegetation. These changes would affect terrestrial and aquatic animals by influencing the diversity, amount, availability, and quantity of food, cover, and water. In this section, the analysis of these changes in the habitat are related to the effects on current population levels of major species in the area.

Mule Deer

The level of use would initially increase for livestock utilization and decrease for big game. In the long term, big game use would be allowed to increase. This would improve big game habitat. According to Scotter (1980), "Both livestock and wild ungulate pressure may be necessary for balanced use of browse and herbaceous forages to maintain plant communities production for each kind of animal."

On nine allotments (21,526 acres) of critical deer winter range, treatment 4 (spring grazing to increase browse production) would be initiated to benefit deer. In these allotments livestock would make use of spring season grasses. Grass vigor would be held below optimum and available soil moisture could be used for browse production (Jensen et al., 1972; Frischknecht et al., 1979). The rest period would allow maximum browse production for use by big game. This increase in browse and other vegetation would improve the habitat quality for deer.

Vegetation modification of 40,270 acres is also proposed to improve vegetation. By chaining, burning, plowing, spraying, drilling, and interseeding this amount of rangeland, an increase of 14,212 AUMs is expected to occur. Of these AUMs, 3,574 would be allocated to deer. Seventy-five water developments would provide additional sources of water for better distribution of these animals. An immediate deer reduction program would be necessary, thus reducing the herd size by 972 deer.

The construction of 116 miles of fence would have an unquantifiable adverse effect on deer as described in Alternative B. The end result would include an increase in the availability of forage; however, in the short term,

deer AUMs would decrease from 15,460 to 14,622, for a decrease of 972 deer. There would be a long-term increase to 20,656 AUMs (23,960 deer) since diversity of vegetation would be improved. This would mean an increase of 6,027 deer over the current number (17,933 deer).

Antelope

Initially changing the livestock season of use, combined with chaining and seeding of 10,680 acres of antelope habitat, would cause an increase in plant species diversity and introduce species beneficial to antelope. Soon after an area is disturbed, forbs used by antelope become re-established (Stoddard et al., 1975). Fourteen water developments placed in antelope range would improve existing habitat and extend the range to other areas that have previously been unused. The proposed 20 miles of fence in antelope range would be detrimental to antelope movement; however, the extent is unknown.

The end result for antelope would include a deterioration of habitat because of fencing; however, there would be an overall improvement in habitat because of improved food quality, an increase in plant diversity, and additional water. In the short term, there would be no AUMs allocated for an increase of antelope. There would be an increase of 79 AUMs over the long term, for an increase of 63 antelope over the next 20 years.

Elk

Changing the season of livestock use, combined with vegetation modification by chaining, plowing, spraying, and interseeding of 23,145 acres within the current elk-inhabited allotments, would increase the number and diversity of plant species. Forty-three water developments placed in elk range would redistribute these animals and allow them to graze areas that have previously been inaccessible due to lack of water. Fencing would adversely affect movement of young elk as described in Alternative B.

The end result for elk would include improved habitat quality and quantity in the short term. The population would remain static and the AUMs allocated initially would be 19 (8 elk) less than currently used. The long-term allocation would be 2,349 AUMs (855 elk), or an increase of 207 elk over the next 20 years.

Endangered Utah Prairie Dog

The proposed season of use and the increase in number of livestock in the Cedar Grove Allotment would be detrimental to the habitat of the endangered Utah prairie dog, except in the fenced area, because of the direct competition for forage between prairie dogs and livestock. This would occur since early and late spring livestock use is detrimental to prairie dogs, causing them to be less effective in providing milk to their young (Crocker-Bedford, 1976).

It is the biological opinion of the USFWS that spring livestock use could be detrimental to the health of the endangered Utah prairie dog (see Appendix III-5b). The transplant sites and fenced areas would allow the prairie dog population to increase.

Sagegrouse

The proposed season of use and the increase in numbers of livestock in the Cedar Grove Allotment (where the majority of sagegrouse and only identified strutting grounds are located), would be detrimental to sagegrouse.

There would be an increase in sheep-sagegrouse competition for critical succulent vegetation in spring brooding areas which are usually located within close proximity to strutting grounds (Jarvis, 1974). (See figure 3-6 for strutting ground locations.) This would cause a loss of brood productivity, resulting in an unquantified decline in the current population.

Fish and Aquatic Animals

Livestock grazing would be increased on 73 percent of the planning area and, in the long term, would increase to 136 percent of current licensed use. Big game use would initially be 95 percent of current use, but would increase to 137 percent. Because grazing would be increased, Beaver Creek, City Creek, and other fishing streams would be impaired. The 6 miles of proposed fencing would improve only one fishing stream, 2.5 miles of Lost Creek.

The fishery habitat would not improve and, on a long-term basis, could decline as the result of more stress on riparian vegetation due to increased livestock and wildlife use.

Summary

Because of the predicted changes in vegetation production, this alternative could improve big game habitat conditions by enhancing and expanding the existing supply of food, cover, and water over the short and long terms. However, deer and elk numbers would be initially reduced, while antelope numbers would remain the same. In the long term, all big game would be allowed to increase.

For deer, there would be an initial allocation of 14,622 AUMs (16,961 deer), which would be a decrease of 838 AUMs (972 deer) below current use of 15,460 AUMs (17,933 deer). There would be an allocation of 20,656 AUMs (23,960 deer) over the long term, which would be an increase of 5,819 deer over a 20-year period. For antelope, there would be an initial allocation of 120 AUMs (96 antelope), which is the same as the current use. There would be 199 AUMs (159 antelope) available over the long term for an increase of 63 antelope over a 20-year period. For elk, there would be an initial allocation of 1,707 AUMs (648 elk), which would be 19 AUMs (8 elk) less than the current use. There would be 2,249 AUMs (855 elk) available over the long term, which would be an increase of 207 elk over the next 20 years. Sagegrouse and fish populations would be expected to decrease; however, the amount is unquantifiable with available data. Utah prairie dogs would increase by occupying two new sites.

Unavoidable Adverse Impacts

This alternative would result in an initial reduction of deer and elk numbers. There would also be a deterioration in sagegrouse and fish populations.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Short-term impacts would involve a loss of big game; however, big game populations would increase in the long term. The short- and long-term impacts to sagegrouse and riparian areas (fish habitat) is expected to be detrimental, resulting in long-term losses of these animals.

Irreversible or Irretrievable Commitment of Resources

There are no signficant irreversible impacts to terrestrial or aquatic animal life. Short-term irretrievable commitments would include deer and elk reduction programs. Short- and long-term allocations to livestock would require that big game be kept below their biotic potential for a given habitat area. Short- and long-term use of riparian zones would require that fish species be kept below their biotic potential.

Conclusion

In the short term, this alternative would decrease population levels of big game, sagegrouse, and fish. In the long term, it would allow for an increase in big game above the current use level but continue to decrease sagegrouse, and fish habitats. Fish populations would remain static or deteriorate except for the 5 miles of fenced stream. The endangered Utah prairie dog would increase in both the short and long terms.

ANALYSIS OF IMPACTS TO LIVESTOCK GRAZING UNDER ALTERNATIVE C

Introduction

The allocation of forage to livestock would initially be 29,411 AUMs (1,429 AUMs or 5 percent above the current allocation) and, in the long term, would be 36,363 AUMs (6,952 AUMs or 25 percent greater than the current allocation). Specific actions which affect livestock grazing are levels of use, proposed changes in allocation, allotment combinations, grazing treatments, and range developments. In the long term, the level of use relates directly to the improvement in vegetation production predicted for the long term. Changes in livestock grazing resulting from these actions will be assessed as they relate to impacts on the livestock industry and individual operators.

The projected changes from actual AUMs used are given below by ranch category (size of operation and class of animal).

		Total for Each Ranch Category		
	Number of	AUMs	Changes in AUMs	
Ranch Category	Operators	Existing Use	Initial	Long Term
Small Sheep Operators	6	136	+31	+37
Large Sheep Operators	35	18,807	+953	+4,117
Small Cattle Operators	42	3,209	+115	+1,475
Medium Cattle Operators	14	1,506	+57	+833
Large Cattle Operators	14	4,324	+273	+490

Source: Appendixes II-1 and III-6.

Level of Use. The implementation of Alternative C would have the following impacts on livestock grazing as measured by allocation of AUMs:

1. An initial 20-percent reduction in the overall livestock level of use.

2. Partial reductions involving a total of 3,783 AUMs (from 13,970 to 10,187 AUMs or a 27-percent reduction) on 20 allotments. This would affect 36 different grazing operations.

3. The current livestock level of use of 430 AUMs would remain unchanged on four allotments.

4. An initial increase in the livestock level of use from 13,582 to 18,794 AUMs (an increase of 5,212 AUMs or 30 percent) on 35 allotments. This would affect 119 different livestock operations.

5. There could be an areawide long-term increase in the livestock level of use from the initial 29,411 to 36,363 AUMs. This would be 6,952 AUMs above the existing level.

6. On the 20 allotments where livestock level of use would be initially reduced, 13,773 AUMs would be restored to the 36 livestock operations. This is 1 percent below the current allocation of 13,970 AUMs.

Grazing Treatments. All allotments would have grazing treatments as proposed in table 2-3. The proposed grazing treatments such as allotment combinations and reduced spring use would have the following impacts:

1. Forty-eight allotments would be combined into 17 allotments (as in Alternatives A and B), which would affect 82 livestock operations. The season of use on 13 of the allotments involved in the combinations would also be changed. Therefore, 73 of the 82 livestock operations would be impacted by both changes.

2. The season of use would be changed on 18 allotments not involved in combinations. This would affect 32 livestock operations, necessitate a change in patterns of use, and cause coordination impacts with private and National Forest lands.

Range Developments. (See table 2-2 for proposed range developments by allotment and in total.) This alternative proposes that 6 miles of riparian vegetation be fenced to exclude livestock. This action would impact three different livestock operations on one allotment. (Refer to the analysis of impacts to livestock grazing under Alternative A for assessment of the effects of range developments.) The proposed range developments (vegetation modification and support facilities) would, in some cases, require a commitment of funds and resources by the livestock operator and also require a 2-year period of non-use following vegetation modifications. Each of the range developments would cause some modification in the type of livestock management within individual allotments. However, most of the range developments would aid in livestock management by providing higher quality feed, more water, and better livestock distribution.

Summary

Livestock grazing would not be eliminated on any allotments. Initially, livestock grazing would be reduced by 3,783 AUMs on 20 allotments, affecting 36 livestock operations. The number of AUMs for livestock would be increased by 5,212 AUMs on 35 allotments and would involve 119 livestock operations. In the long term, there would be an increase from 29,411 to 36,363 AUMs in these allotments. There would be an increase of 6,952 livestock AUMs affecting the same operators.

Unavoidable Adverse Impacts

Livestock grazing would be adversely affected on 20 allotments by reducing grazing by 27 percent during the initial period. This would affect 36 different livestock operations. One hundred and five of the 167 operations would require a season-of-use change affecting coordination with private land and National Forest use periods.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

The actions required to implement this alternative would cause an overall initial increase in livestock grazing. In the long term (20 years), the continued increase in livestock numbers and improved management would improve the livestock operators' situation and make grazing of livestock more stable.

As vegetation improved and production increased, rangelands would become more valuable for other resources such as watershed, recreation, and other uses.

Irreversible or Irretrievable Commitment of Resources

There are no irreversible commitments made by this alternative. There would be an initial irretrievable loss of 3,783 AUMs to 36 livestock operations. There would be a 2-year loss of grazing use following vegetation modification on 40,270 acres.

Conclusion

Initially, 119 livestock operations on 35 allotments would benefit from a 38-percent increase in livestock forage allocation. Thirty-six livestock operations would sustain an initial 27-percent reduction in AUMs allocated; 4 would not be affected by changes. Season-of-use changes would, initially and in the long term, affect 105 livestock operations, and 82 operations would be consolidated on 17 allotments.

ANALYSIS OF IMPACTS TO RECREATION UNDER ALTERNATIVE C

Introduction

Impacts would occur to recreation when management and/or allocation would alter numbers of deer, antelope, elk, and sagegrouse available for hunting, and trout available for fishing as explained in Alternative A.

Hunter and Fisherman Success and Days

The initial decrease and long-term increase in deer numbers would result in an unquantified decrease in hunter success initially and an unquantified increase in hunter success over the long term. With the current hunter success ratio, the potential change in deer numbers would provide for an initial decrease in deer hunter days from the 19,137 deer hunter days currently provided by the Mountain Valley Planning Area to approximately 17,985 hunter days. Over the long term, there would be an increase to approximately 25,407 hunter days.

There would be no initial change in antelope hunter success or antelope hunter days provided by the planning area. The potential increase in antelope numbers over the long term would result in an increase in hunter success over the long term. With the current hunter success ratio, the potential increase in antelope numbers would provide for a long-term increase in antelope hunter days from the 5 hunter days currently provided to approximately 8 hunter days.

The initial decrease and long-term increase in elk numbers would result in an unquantified decrease in hunter success initially, and an unquantified increase in hunter success over the long term. With the current hunter success ratio, the potential change in elk numbers would provide for an initial decrease in elk hunter days from the 1,164 hunter days currently provided by the planning area to approximately 1,144 hunter days. Over the long term, there would be an increase to approximately 1,507 hunter days.

The decrease in sagegrouse numbers would result in an unquantified decrease in sagegrouse hunter success and hunter days provided by the planning area initially and over the long term.

The continued decrease in trout populations would result in an unquantified decrease in fisherman success and fisherman days provided by the planning area initially and over the long term.

Summary

Alternative C would result in the following:

1. There would be an initial decrease in big game hunter days from the 20,306 hunter days currently provided by the planning area to 19,134 hunter days. Over the long term, there would be an increase to 26,922 hunter days.

2. There would be an unquantified decrease in sagegrouse hunter days provided by the planning area initially and over the long term.

3. There would be an unquantified decrease in fisherman days provided by the planning area initially and over the long term.

Unavoidable Adverse Impacts

There would be an overall decrease in big game hunter days provided by the planning area initially. There would be an overall decrease in sagegrouse hunter days and in fisherman days provided by the planning area initially and over the long term.

Relationship Between Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

The increase in hunter days and decrease in fisherman days provided by the planning area during the 20-year production period would continue into the long term.

Irreversible or Irretrievable Commitment of Resources

None.

Conclusion

There would be an overall decrease in big game and sagegrouse hunter days and in fisherman days provided by the planning area during the short term. There would be an overall increase in big game hunter days above the current use level over the long term, but sagegrouse hunter days and fisherman days would continue to decrease.

ANALYSIS OF IMPACTS TO SOCIOECONOMICS UNDER ALTERNATIVE C

Introduction

In this section, the social and economic impacts of the alternative will be analyzed. This analysis will include impacts to ranch income and capital, regional economic impacts, and social impacts.

In analyzing ranch income impacts due to changes in BLM permits, two scenarios are used: (1) feed change; and (2) herd change. However, the only way ranchers could make increased use of permits would be to increase their herd size and, if necessary, buy additional feed. Changes in the number of AUMs could also impact ranch capital by means of the "market value" of the permit. This analysis attempts to quantify economic impacts to the average ranch in each category, but may not reflect actual impacts to individual ranchers.

Sanpete, Sevier, Piute, Juab, Millard, and Wayne Counties share many geographic and economic ties. Together they comprise the Six County Economic Development District. Data for this district will be analyzed to project regional income, output, and employment.

Ranch Impacts. The following table presents a "worst case" summary of the economic impacts to the various ranch categories, shown as percentage changes from present levels. (The partial budgets for all ranch categories are listed in Appendix IV-4.)

Operators	Present Net Cash Income	Percent Change to Net Cash Income		Percent Change in BLM Permit and Capital Value	
		Initial	Long Term	Initial	Long Term
Sheep Operators					
Small (1-199)	$2,564	+20.4	+27.0	-22.8	+27.2
Large (200+)	30,447	+4.8	+20.6	+5.1	+21.9
Cattle Operators					
Small (1-99)	1,625	-8.9	-141.6	+3.6	+46.0
Medium (100-199)	7,785	+15.2	+32.2	+3.8	+54.3
Large (200+)	17,493	+6.0	+10.4	+6.3	+11.3

Source: Appendix IV-4.

Under this alternative, the small cattle category would experience the most severe income impact, showing a net loss of 141.6 percent ($2,301) in the long term. This would occur as a result of a 46-percent increase in allocation and the assumption that the operator would increase the herd to make use of this increase. (See Socioeconomics section, Alternative A.) The magnitude of this loss indicates that the existing base operation of the average small cattle ranch cannot tolerate such a large increase in herd size without a substantial increase in costs. The medium and large cattle categories are projected to show net increases of 32.2 percent ($2,507) and 10.4 percent ($1,819), respectively under the herd increase in the long-term.

The sheep categories would show income gains of 4.8 percent to 20.4 percent in the initial phase, increasing to 20.6 percent ($6,272) for the large category and 27.0 percent ($692) for the small category in the long term.

This alternative would significantly increase BLM permit size and capital value in all ranch categories. These increases vary from 3.6 percent to 22.8 percent initially, to 11.3 to 55.3 percent in the long term. The largest estimated increase in a permit (+55.3 percent) would occur in the medium cattle category in the long term. The largest increase in the short term (+22.8 percent) would occur in the small sheep category.

Regional Impacts

Regional impacts due to changes in the livestock industry and big game hunting are presented below:

	Value and Percent Change From Existing Level					
	Total Gross Output[a]		Labor[b]		Income[a]	
Regional Impacts	Initial	Long Term	Initial	Long Term	Initial	Long Term
Livestock Grazing	<0.1 (+230.0)	+0.2 (+1,028.8	+0.1 (+8.8)	+0.3 (+39.2)	<0.1 (+48.4)	+0.2 (+216.5)
Big Game Hunting	<0.1 (-25.9)	<0.1 (+216.8)	<0.0 (-1.7)	+0.1 (+12.6)	<0.1 (-10.8)	+0.1 (+82.7)

Source: FS and BLM.

[a]Value in thousands (1,000s) of dollars.

[b]Value in man years.

Impacts to the regional economy from changes in livestock grazing would occur mostly in the long term and would be moderately positive, relative to the other alternatives.

Impacts from changes in big game numbers would be slightly positive and occur only in the long term.

Attitudes and Expectations

Short-term and long-term positive attitudinal and lifestyle impacts would occur. Short-term negative attitudinal and lifestyle impacts would be experienced by livestock reductions. However, for the most part, they would be mitigated by increased long-term allocations. Long-term positive attitudinal impacts would be experienced by recreationists as a result of increases in big game allocations. Generally, conservationists would feel this alternative would improve the overall character of the landscape, but preservation-oriented groups would question increases in livestock use on the majority of allotments as balanced management strategy.

Unavoidable Adverse Impacts

Small cattle operators could suffer economic losses.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

None.

Irreversible and Irretrievable Commitment of Resources

Commitment of economic resources would not be irreversible prior to their actual use or loss. Beyond the point of use, they are irretrievable.

Conclusion

This alternative would have a significant positive impact on ranch net cash income, with the small cattle category showing the only loss. Capital value of permits would increase in every category. Economic impacts to the regional economy are projected to be positive.

ALTERNATIVE D: ELIMINATE LIVESTOCK GRAZING

ANALYSIS OF IMPACTS TO VEGETATION UNDER ALTERNATIVE D

Introduction

An initial 9-percent decrease in the overall allocation is proposed by this alternative. Livestock use would be eliminated on all allotments. Big game use would be increased 138 percent areawide.

Vegetation would be modified on 6,850 acres by chaining, spraying, burning, plowing, and seeding. Livestock would be removed from the riparian areas by this alternative action. (See tables 2-1, 2-2, and 2-3 for more detail of proposed alternative actions.)

Vegetation Production and Composition

Level of Use. Livestock use would be completely eliminated by this alternative, and big game use would be increased 138 percent. The magnitude of change in forage production directly attributable to the proposed reduction in vegetation utilization is expected to be 13,222 AUMs. The elimination of grazing by livestock would cause some change in vegetation composition and production. This alternative would create more grazing by big game on browse and forb species, thus reducing use on grasses. The composition would be expected to change, favoring grasses (Holmgren, 1976).

Grazing Treatments. This alternative proposes that the 90 allotments retain their present boundaries (no consolidation) and treatment 6 (total rest from livestock grazing) be initiated on all allotments (499,972 acres). Complete rest from livestock grazing would cause a significant improvement in vegetation production, condition and trend (see table 2-3). In areas similar to the Mountain Valley Planning Area, Robertson (1971) found that on ranges where there was no livestock grazing and big game use was moderate (50 percent of key plant species), a significant increase of 75 to 85 percent in perennial forbs and grass occurred. The magnitude of change in forage production directly attributable to the elimination of livestock grazing under treatment 6 is predicted to be 4,078 AUMs.

The continued use by big game and non-use by livestock would favor the expression of grass species. According to Holmgren (1976), browse species would decline to a more balanced vegetation composition. The change would continue over a 20-year period, but would not be significant in this time frame.

Vegetation Modification. This alternative proposes vegetation modification in pinyon-juniper and sagebrush types by chaining, burning, plowing, spraying with herbicide 2,4-D, and drilling or interseeding with well adapted productive plant species (see table 2-2). Approximately 2 percent of the sagebrush community (3,370 acres) and 2 percent of the pinyon-juniper community (3,480 acres) would be modified. The total vegetation modification would be approximately 1 percent (6,850 acres) of the total area.

The amounts and kinds of proposed vegetation modification are given below with a brief analysis of the expected increases in vegetation production. The exact percent of change in composition from pinyon-juniper and sagebrush to other woody species (browse), forbs, and grasses cannot be predicted because of the variation in the range sites.

1. Chaining on 3,480 acres:

Similar results as described in Alternative A could be expected (0.3 AUMs per acre or 1,044 AUMs). Composition is predicted to change initially from pinyon-juniper and sagebrush to more desirable forage grass and browse species on the areas modified.

2. Browse interseeding on 2,770 acres:

In this alternative, 2,770 acres would be treated and the increase would be much the same as expected in Alternative A (0.23 AUMs per acre). This would produce an increase of 637 AUMs. The predicted change in composition would be toward more desirable browse species. Existing composition would be improved by interspaces being filled with more browse and grass plants.

3. Prescribed burning on 600 acres:

Similar results are expected in the planning area as discussed in Alternative A (0.5 AUMs per acre or 300 additional AUMs). Composition of vegetation is predicted to change initially from a predominantly sagebrush type to a browse-forb range.

The combined effects of vegetation modifications on vegetation (6,850 acres) would be to increase production by 2,281 AUMs in the long term.

Riparian Vegetation

This alternative proposes that none of the riparian vegetation be fenced. Within 2 to 3 years of implementation, there would be a marked improvement in the condition of riparian vegetation. (See analysis of impacts in Alternative A, where fencing would remove livestock use from riparian areas.) The livestock reduction, especially cattle, would cause improvements in riparian vegetation. When livestock are removed from riparian areas by fencing or elimination of grazing, the riparian vegetation can respond by increased production and vigor in a short-term period.

Vegetation Condition and Trend

Range condition and trend are affected by changes in vegetation modification, grazing treatments (eliminate grazing), level of use (no livestock use), and riparian vegetation. The combined effects of these changes on vegetation are assessed in this section.

As the utilization of vegetation under this alternative is reduced from heavy (60 to 80 percent) to moderate (50 percent or less) and then used only by big gam, , plant vigor would improve and promote increased key plant growth and reproduction. In addition to reducing the degree of vegetation utilization in the planning area, livestock grazing would be eliminated completely.

The reduction in utilization by big game and complete removal of livestock would increase vegetation production by 13,222 AUMs. This, in conjunction with the 6,850 acres of proposed vegetation modification, would produce 2,281 additional AUMs and improve the vegetation in the planning area by 19,581 AUMs.

Declining trend would be reversed as a result of improved plant vigor, accelerated growth, and reproduction. This, in turn, would improve range condition from poor to fair on 32,200 acres and from fair to good on 280,748 acres within a 20-year period. All ranges currently in good condition (186,988 acres) would remain that way since they would be used only by big game, primarily in the fall and winter. The riparian areas would show marked improvement (as suggested in Alternative A) when livestock grazing was removed.

Summary

Currently, vegetation produces 38,268,000 lbs. of air dried forage (47,835 AUMs) in the planning area. It is predicted that within 20 years, after all proposed changes have been implemented and range developments completed, 53,932,800 lbs. of air dired forage (67,416 AUMs) would be produced. This amount of forage exceeds the amount currently produced by 15,664,800 lbs., an increase of 19,581 AUMs. The end result is a range productivity increase of about 0.04 AUMs per acre.

As vegetation production is increased, range condition would improve from fair to good and from poor to fair. Riparian vegetation would also improve as a result of limited use by big game.

Unavoidable Adverse Impacts

There would be no unavoidable adverse impacts to the range vegetation.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

The actions necessary to implement this alternative would cause an initial increase in the rangeland vegetation. Over a period of 20 years, the improvements in the vegetation resource, production, and range condition would increase the quality and productivity of rangeland. Overall range improvements would benefit only big game.

Irreversible or Irretrievable Commitment of Resources

There are no irreversible commitments of the vegetation resource. There would be an annual irretrievable consumption of vegetation by big game and a short-term irretrievable commitment of pinyon-juniper, sagebrush, and other plant species caused by the 6,850 acres of proposed vegetation modification.

Conclusion

Implementation of this alternative would be beneficial to vegetation in the planning area (499,972 acres). Vegetation production would increase and range condition and trend would improve. Browse species would decline to a more balanced ecological vegetation composition.

ANALYSIS OF IMPACTS TO SOIL UNDER ALTERNATIVE D

Introduction

The soil would be affected by changes in ground cover, soil surface disturbance, soil compaction, and water infiltration. These factors all influence the erosion rates as described in Alternative A.

Soil Erosion

Changes in Vegetation Resource. Implementation of this alternative would be beneficial to vegetation on the Mountain Valley Planning Area (499,972 acres). Vegetation production would increase and range condition and trend would improve. As has been discussed in Alternative A, this would lead to a decrease in soil erosion.

Range condition would improve from poor to fair on 32,200 acres, and from fair to good on 280,784 acres within a 20-year period. This improvement in range condition would lead to a decrease in soil erosion, although soil changes lag plant changes. All range currently in good condition (186,988 acres) would remain constant and soil erosion would not change.

Level of Use. Utilization of vegetation would be reduced and plant vigor would improve, promoting key plant growth and reproduction (especially grasses). The elimination of livestock use would decrease the amount of trampling. This, along with vegetation improvement, would reduce soil erosion.

Vegetation Modification. Vegetation modification would not bring about adverse effects to the soil in the short term except for prescribed burning on 600 acres. In the long term, beneficial results to the soil are expected from all vegetation modifications (for a detailed discussion see Soil section, Alternative A).

Areas in Severe and Critical Erosion Condition. The 57,138 acres in severe and critical erosion condition create special problems for proper soil management. Livestock grazing would be eliminated on all of these areas. The soil condition would improve. However, some of the current situation is due to the inherent nature of the soil parent material and the soil would not respond to the reduction in livestock trampling. A total of 2,380 acres in the severe and critical erosion class would receive vegetation modification.

Riparian Areas

Most soils in riparian areas are currently eroding (for a detailed discussion see Soils section, Alternative A). The elimination of livestock is expected to cause riparian vegetation to improve to good condition within 20 years. Soil erosion classes would show this improvement, but would lag vegetation improvement.

Unavoidable Adverse Impacts

There would be short-term soil losses due to prescribed burning.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Implementation of range developments and certain identified vegetation modifications would cause short-term localized soil disturbance and increased soil erosion. Enhancement of long-term productivity to the soil resource would occur through decreases in soil erosion.

Irreversible or Irretrievable Commitment of Resources

There would be an irreversible loss of productive soil on areas where heavy erosion is allowed to continue. There would be an irretrievable localized loss of soil due to construction of range developments and vegetation modification.

Conclusion

Soil erosion condition would improve.

ANALYSIS OF IMPACTS TO WATER RESOURCES UNDER ALTERNATIVE D

Introduction

Changes in vegetation affect soil erosion rates, sediment yield, and soil compaction. These factors, in turn, affect water infiltration and water quality. Due to their strong interrelationships, these factors are discussed together.

Water Quality and Quantity

Utilization of vegetation would be reduced from heavy (60 to 80 percent) to moderate (50 percent or less) and plant vigor would improve, promoting key plant growth and reproduction. Soil erosion would be reduced in the Mountain Valley Planning Area as a result of increased soil cover and decreased soil compaction. Water runoff would decrease and infiltration would increase in the planning area. This would improve the water quality of overland flow to streams which occurs during spring snowmelt or heavy rain events. As livestock utilization is eliminated, coliform bacterial counts would be reduced; however, unacceptable limits could still be reached on areas where big game congregate.

Vegetation modification would not bring about adverse impacts to the water in the short term, except for prescribed burning on 600 acres. In the long term, beneficial results to the water are expected from all vegetation modifications (for a detailed discussion see Water Resources section, Alternative A).

Riparian Areas

Although no comprehensive studies have been completed on streambank areas in the planning area, it is expected that overutilization has left riparian areas in a deteriorated state (see Water Resources section, Alternative A). The elimination of livestock is expected to cause the riparian vegetation to improve to good condition within 20 years. Soil conditions are expected to improve. This would improve water quality, decrease water temperatures, stop the breakdown of streambanks, and decrease dissolved and suspended solids.

Unavoidable Adverse Impacts

Identified vegetation modifications would cause a short-term localized decrease in water quality and increased water runoff.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Implementation of certain identified vegetation modifications would cause short-term localized increased soil erosion and increased water runoff. Enhancement of long-term productivity to the water resource would occur through increased stabilization of the soil and decreased utilization.

Irreversible and Irretrievable Commitment of Resources

There are no irreversible commitments of the water resource. There would be an irretrievable localized and short-term decrease in water quality due to certain identified vegetation modifications.

Conclusion

Water infiltration and water quality of overland runoff would improve as a result of livestock elimination and improved vegetation and soil condition. Stream condition would return to a natural state.

ANALYSIS OF IMPACTS TO ANIMAL LIFE UNDER ALTERNATIVE D

Introduction

The elimination of livestock and development of range projects are specific actions of the proposal that would be beneficial to vegetation. These changes in vegetation would affect terrestrial and aquatic animals by influencing the diversity, amount, and availability of food, cover, and water quality. In this section, the analysis of these changes in the habitat are related to the effects on current population levels of major species in the Mountain Valley Planning Area. The effects of the predicted levels of big game use could cause impacts to National Forest and private lands. Fencing of private and State lands to control livestock would impact big game animals. The extent and impacts of this action cannot be predicted because improperly constructed fences could be detrimental to big game.

Mule Deer

This alternative would eliminate livestock utilization and increase utilization by big game. Without a proper mixture of browsing and grazing animals, habitat could deteriorate over the long term. A balance between livestock and big game is necessary to obtain optimum range conditions. According to Scotter (1980), "Both livestock and wild ungulate pressure may be necessary for balanced use of browse and herbaceous forages to maintain plant communities production for each kind of animal." However, because of the lack of livestock competition, the initial allocation would not exceed the current vegetation available and would provide the required forage for deer use. With a 42-percent increase in big game use, the initial change would still show a 9-percent decrease of overall current vegetation use. For the first 5 years there would be lighter use of vegetation, resulting in maximum browse, grass, and forb production available for use by big game.

Vegetation modification of 6,850 acres is also proposed. By chaining, burning, and interseeding this rangeland, an increase of 2,281 AUMs is expected to occur. All of these AUMs would be allocated to deer.

The end result for deer would include an improvement in habitat quality and quantity in the short term. In the short term, deer AUMs would increase from 15,460 (17,933 deer) to 34,780 (40,345 deer) for an increase of 22,412 deer. In the long term, AUMs would increase to 45,533 AUMs (52,818 deer) since diversity of vegetation would be improved. This would result in an increase of 34,885 deer over the current number.

Antelope

With the elimination of livestock grazing, there would be an immediate beneficial effect to antelope range. There would be an increase in grass and forbs and more abundance of existing browse forage. Habitat would further be improved by an increase in the available water supply which would no longer be used by livestock. With no further need for allotment boundary fences, they could be removed, thus enhancing the antelope habitat.

The end result for antelope would include an improvement in habitat and food quality through increased plant diversity and quantity. In the short term, there would be an initial increase of 801 AUMs for antelope (640 antelope) and an increase of 1,247 AUMs over the long term, for an increase of 998 antelope over the next 20 years.

Elk

The changes explained above in the deer and antelope sections would also benefit elk; however, because it is expected that grasses would increase in this alternative, the habitat would be even more advantageous and productive for elk. The end result for elk would be improved habitat quality and quantity in the short and long terms. There would be an initial increase from 1,726 AUMs (652 elk) to 7,127 AUMs (2,708 elk), or an increase of 2,056 elk, and a long-term increase from 1,726 AUMs (652 elk) to 12,846 AUMs (4,881 elk), or an increase of 4,229 elk.

Endangered Utah Prairie Dog

The proposed elimination of livestock in the Cedar Grove Allotment would initially greatly enhance the habitat of the endangered Utah prairie dog. This would occur because early and late spring livestock use is detrimental to prairie dogs (Crocker-Bedford, 1976). It would also be in accord with the USFWS biological opinion (Appendix III-5b) on the Parker Mountain prairie dog population which states that spring livestock use could be detrimental to the health of the endangered Utah prairie dog. The long-term effect on the Utah prairie dog is unknown, but most biologists believe that, in the long term, no livestock grazing could be almost as detrimental as too much livestock grazing or grazing during the wrong season. Therefore, in the short term, populations are expected to increase. The effects beyond 20 years are unknown.

Sagegrouse

This alternative would have an immediate beneficial impact on sagegrouse habitat. The elimination of livestock grazing would prevent sheep-sagegrouse competition for critical succulent vegetation in spring brooding areas which are usually located within close proximity to strutting grounds. (Jarvis, 1974). (See figure 3-6 for strutting ground locations.) This would cause a gain in brood productivity which is unquantifiable with existing data. The long-term effect is unknown.

Fish and Aquatic Animals

Under this alternative, livestock would not be allowed to graze. Because big game do not use the majority of rangeland in the planning area during late spring, summer, or early fall, there would be an increase in the production of vegetation. "Exclusion of livestock in riparian zones would improve cover of riparian vegetation along streambanks and streambank stability" (Duff, 1978). The streambank cover would especially improve because big game animals do not spend as much time loafing in the riparian zone.

The fish habitat along the 40 miles of riparian vegetation in the planning area would improve. Streams such as Beaver Creek and Otter Creek would become more productive over the long term.

Summary

The initial and long-term allocations of vegetation to big game provided by the proposed actions would increase big game above the current level.

For deer, there would be an initial allocation of 34,780 AUMs (40,345 deer), which would be an increase of 22,412 deer above the current level. There would be an allocation of 45,533 AUMs (52,818 deer) over the long term which would be an increase of 34,885 deer over the existing population. For antelope, there would be an initial allocation of 921 AUMs (736 antelope), which is 821 AUMs (640 antelope) above the current level. There would be 1,367 AUMs (1,093 antelope) available over the long term, an increase of 997 antelope. For elk, there would be an initial allocation of 7,127 AUMs (2,708 elk), which is 2,056 elk more than the present population. There would be 12,846 AUMs (4,881 elk) available over the long term, which is an increase of 4,229 elk over the next 20 years.

Because of the predicted increase in vegetation production brought about by the elimination of livestock, this alternative would improve big game habitat conditions by enhancing and expanding the existing supply of food, cover, and water over the short and long terms. Sagegrouse, fish, and the endangered Utah prairie dog habitat would also be enhanced and expanded for the same reasons.

Unavoidable Adverse Impacts

There are no significant unavoidable adverse impacts to terrestrial or aquatic animal life.

Relationship Between the Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Short-term impacts would show an increase in all animal life described in this section. These increases would start slowly at first (1 to 5 years) and then, as habitat improved, the biotic potential of the species is such that by the end of the 20-year period, these animals could overpopulate their ranges. Long-term impacts to man's environment would show an increase (starting in the latter years of the 20-year period) in animal depredation (primarily from big game species) of private crops. There would also be a positive impact of increased game animals to meet the hunter, fisherman, and recreationist demands.

Irreversible or Irretrievable Commitment of Resources

There are no significant irreversible or irretrievable impacts to terrestrial or aquatic animal life.

Conclusion

In the short and long terms, this alternative would increase big game species as well as sagegrouse, fish, and the endangered Utah prairie dog.

ANALYSIS OF IMPACTS TO LIVESTOCK GRAZING UNDER ALTERNATIVE D

Introduction

This alternative proposes the 100 percent elimination of livestock grazing in the Mountain Valley Planning Area (499,972 acres).

Level of Use. There are 111 different livestock operators or individuals who run a total of 167 different livestock operations. The implementation of Alternative D would reduce 27,982 AUMs of livestock use from public lands. The projected changes from existing actual AUMs use are given below by ranch category (size of operation and class of animal).

Ranch Category	Operators	Existing Use	Initial	Long Term
Small Sheep Operators	6	136	-136	--
Large Sheep Operators	35	18,807	-18,807	--
Small Cattle Operators	42	3,209	-3,209	--
Medium Cattle Operators	14	1,506	-1,506	--
Large Cattle Operators	14	4,324	-4,324	--

Source: Appendixes II-1 and III-6.

Unavoidable Adverse Impacts

Livestock grazing would be adversely affected by reducing grazing by 100 percent. This would affect 167 different livestock operations and 111 individual operators.

Irreversible or Irretrievable Commitment of Resources

There are no irreversible commitments made by this alternative. There would be an initial irretrievable loss of 27,982 AUMs.

Relationship Between Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

This alternative would eliminate 27,982 AUMs of livestock grazing in the short term. In the long term, there would be no increase in livestock use. As vegetation production improved, rangelands would become more valuable for watershed, recreation, and other uses.

Conclusion

One hundred and eleven livestock grazing operations would lose 27,982 AUMs in this alternative. This would cause changes to their management.

ANALYSIS OF IMPACTS TO RECREATION UNDER ALTERNATIVE D

Impacts would occur to recreation when management and/or allocation would alter numbers of deer, antelope, elk, and sagegrouse available for hunting, and trout available for fishing as described in Alternative A.

Hunter and Fisherman Success and Days

The increase in deer numbers would result in an unquantified increase in hunting success initially and over the long term. With the current hunter success ratio, the potential increase in deer numbers would provide for an increase in deer hunter days from the 19,137 hunter days currently provided to approximately 40,776 hunter days initially and approximately 54,002 hunter days over the long term.

The increase in antelope numbers would result in an increase in hunter success initially and over the long term. With the current hunter success ratio, the potential increase in antelope numbers would provide for an increase in antelope hunter days from the five hunter days currently provided to approximately 37 hunter days initially and approximately 55 hunter days over the long term.

The increase in elk numbers would result in an increase in hunter success initially and over the long term. With the current hunter success ratio, the potential increase in elk numbers would provide for an increase in elk hunter days from the 1,164 hunter days currently provided to approximately 4,775 hunter days initially and approximately 8,607 hunter days over the long term.

The increase in sagegrouse numbers would result in an unquantified increase in sagegrouse hunter success and hunter days provided by the Mountain Valley Planning Area initially and over the long term.

The increase in trout populations would result in an unquantified increase in fisherman success and fisherman days provided by Beaver Creek, Pine Creek, Lost Creek, Otter Creek, and the Sevier River initially and over the long term.

Summary

Alternative D would result in the following:

1. There would be an overall increase in big game hunter days from the 20,306 hunter days currently provided by the planning area to approximately 45,588 hunter days initially and 62,664 hunter days over the long term.

2. There would be an unquantified increase in sagegrouse hunter days provided by the planning area initially and over the long term.

3. There would be an unquantified increase in fisherman days provided by the planning area initially and over the long term.

Unavoidable Adverse Impacts

None.

Relationship Between the Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

The increase in hunter and fisherman days provided by the planning area during the 20-year production period would continue into the long term.

Irreversible or Irretrievable Commitment of Resources

None.

Conclusion

There would be an increase in big game and sagegrouse hunter days and in fisherman days provided by the planning area initially and over the long term.

ANALYSIS OF IMPACTS TO SOCIOECONOMICS UNDER ALTERNATIVE D

Introduction

The socioeconomic impacts of eliminating livestock grazing on public lands are analyzed on ranch and regional levels as described under the introduction to Alternative A.

Ranch Impacts

The following summarizes the "worst case" economic impact to the various ranch types and sizes. All BLM permits would be eliminated, as would their capital value to the ranchers. (The partial budgets for all ranch categories are listed in Appendix IV-4.)

Operators	Present Net Cash Income	Percent Change to Net Cash Income	Percent Change in BLM Permits and Capital Value
Sheep Operators			
Small (1-199)	$2,564	-42.2	-100.0
Large (200+)	30,447	-37.6	-100.0
Cattle Operators			
Small (1-99)	1,625	-127.8	-100.0
Medium (100-199)	7,785	-36.6	-100.0
Large (200+)	17,493	-29.5	-100.0

Source: Appendix IV-4

The small cattle category under the feed purchase scenario would experience the most severe income impact, showing an annual net loss of 127.8 percent ($2,077). The large cattle category is projected to show the least net loss of 29.5 percent ($5,160) under the herd decrease scenario.

Regional Impacts

Regional impacts due to changes in the livestock industry and big game hunting are presented below:

Regional Impacts	Total Gross Output[a] Initial	Total Gross Output[a] Long Term	Labor[b] Initial	Labor[b] Long Term	Income[a] Initial	Income[a] Long Term
	Value and Percent Change From Existing Level					
Livestock Grazing	-0.7 (-3,613.5)	--	-1.0 (-142.1)	--	-0.6 (-704.5)	--
Big Game Hunting	+0.1 (+321.7)	+0.1 (+394.6)	+0.1 (+18.7)	+0.2 (+22.9)	+0.1 (+122.7)	+0.1 (+150.4)

[a]Value in thousands (1,000s) of dollars.

[b]Value in man years.

The economic impacts from changes in livestock grazing are the most negative relative to the other alternatives.

The impacts from increased big game are very similar to those under Alternative A and are the most positive relative to the other alternatives. However, these positive impacts are not as extensive as the negative impacts from livestock grazing.

Attitudes and Expectations

Short- and long-term negative attitudinal and lifestyle impacts would occur to livestock operators and trade centers. The resultant decline in ranching lifestyle would negate permit value, followed by increased difficulty of intergenerational transfer of ranch properties. Some outmigration of the younger generation population could be expected. Many ranchers would move to diminished operations. Short- and long-term relationship deterioration with the BLM would manifest itself with the threat, or actual filing, of legal actions. Short- and long-term positive attitudinal impacts would be experienced by recreationists, conservationists, and preservation groups because of changes in land appearance and resulting increases in wildlife as allotments gradually emphasized a natural rather than a cultural landscape.

Unavoidable Adverse Impacts

Implementation of this alternative would result in losses of ranch income and capital value.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

The negative economic impacts to ranch operators can be viewed as a short-term cost for a long-term benefit to the natural resource base. However, questions regarding the equitable distribution of these economic costs are numerous and unanswered.

Irreversible or Irretrievable Commitment of Resources

Commitment of economic resources in the form of rancher losses and government expenditure of $24,500, would not be irreversible prior to their actual use or realization. Beyond that point, they are irretrievable.

Conclusion

This alternative would significantly decrease annual net ranch income in almost every ranch category, and an undetermined but significant number of operations would probably cease commercial operation. Capital value of the permit would be lost. Regional economic impacts would also be negative.

This proposal would maximize negative attitudinal and lifestyle impacts, with probable snowballing effects to livestock operators and trade centers in the planning area. Positive benefits would be realized by other interest groups.

ALTERNATIVE E: CONTINUATION OF PRESENT MANAGEMENT

ANALYSIS OF IMPACTS TO VEGETATION UNDER ALTERNATIVE E

Introduction

An initial 18-percent increase in the overall level of use (livestock and big game) is proposed by this alternative. By implementing this alternative, the utilization of vegetation could increase from the current average use (60 to 80 percent) to an even higher level. This would occur as a result of allowing the use to be increased to the preference level of grazing without improvement in management, vegetation modification, or support facilities.

The level of use would be increased on 438,622 acres (88 percent), remain the same on 53,890 acres (11 percent), and be reduced on 2,339 acres (less than 1 percent) of the Mountain Valley Planning Area. One percent of the planning area (5,121 acres, five allotments) currently not grazed by livestock would remain the same under this alternative.

No changes are proposed in existing grazing treatments, and no vegetation modification or range developments would be accomplished. The 90 allotments would not change from the present situation and the riparian vegetation along 40 miles of stream (488 acres) would be grazed. (See tables 2-1, 2-2, and 2-3 for more details of the proposed alternative action.)

Vegetation Production and Composition

Level of Use. The only improvement in vegetation production and composition would occur on the five allotments that are currently unallocated for livestock grazing (5,121 acres, about 1 percent of the planning area).

As indicated in Alternative A, high utilization levels significantly reduce vegetation production and change plant composition. The current level of use would be increased to the proposed level of 57,000 AUMs (9,165 above the range carrying capacity of 47,835 AUMs). The vegetation on all allotments (except the five allotments where no grazing is proposed) would respond adversely. Deterioration in plant vigor would be the first indication of the higher level of use, as present annual average utilization is heavy (60 to 80 percent).

Vegetation production would be reduced 16 percent below the current level to 40,181 AUMs. Heavy use would further deteriorate existing vegetation and the potential of the rangelands to produce would be progressively impaired. The vegetation composition would also change from more desirable forage to less desirable plants. Both livestock and big game forage would be reduced each year until very little grazing capability would exist. This condition is projected to take place within 5 years after implementation (Launchbaugh, 1969).

On the remaining 67 allotments (427,805 acres, 86 percent of the planning area), the increase in the level of use would average greater than 18 percent.

There would be no vegetation production or condition improvements as the level of use increases. Also, there would be no grazing treatments or range modifications that would improve production or composition.

Riparian Vegetation

No fencing of riparian vegetation would occur in this alternative. Except for the 3 miles (approximately 36 acres) of Otter Creek that are

presently fenced, the remaining 37 miles (452 acres) of vegetation in the planning area would continue to be overutilized and remain in their present condition.

Vegetation Condition and Trend

There are 18 allotments grazed at preference level totaling 67,046 acres (13 percent of the planning area) where range condition is good (37,696 acres) or fair (29,183 acres). Trend is static on ranges presently grazed at preference level. In as much as grazing levels would not change in these areas under this alternative, it is projected that range condition would remain unchanged.

On the balance of the area, as plant vigor deteriorate from higher levels of use, trend in range condition would change from static or improving to declining. Over a period of 20 years, range condition would drop one condition class, from good to fair on 147,881 acres (30 percent of the planning area), and from fair to poor on 248,878 acres (50 percent of the planning area), while 36,107 acres (7 percent of the planning area) would remain in poor condition. Launchbaugh (1969) suggests that there is a straight line relationship between productivity and range condition. Two years after implementaton of this alternative, range condition would change and trend would decline on most allotments.

Summary

Existing management and range developments would continue unchanged. On 18 allotments (67,046 acres), the range condition, trend, and vegetation production would remain unchanged from the present situation. On the remaining 72 allotments (432,926 acres), with the increase from licensed to preference use levels, all important vegetation and range indicators would show deterioration and adversely affect range condition, trend, and composition of key plant species. It is expected that, within 5 years after implementation of this alternative, trend would reverse and condition would change from good to fair and, in 20 years, from fair to poor. The riparian vegetation would not change from its present condition.

Unavoidable Adverse Impacts

An unquantifiable deterioration in vegetation composition, condition, and productivity would occur.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Allowing an 18-percent overall increase in the level of use would result in an immediate decline in the rangeland vegetation. This decline, with no change in present management, would, within a short period of time (5 years), decrease the quality of rangelands within the planning area. The decrease in quality would limit future management options and result in a vegetation resource producing less than its potential.

Irreversible or Irretrievable Commitment of Resources

There are no irreversible commitments of the vegetation resource. There would be an annual irretrievable consumption of vegetation by big game and livestock, and a steady irretrievable decline in vegetation productivity, range condition, and trend.

Conclusion

This alternative would be detrimental to vegetation on 427,805 acres (86 percent) of the planning area. On 72,167 acres (14 percent) of the planning area, current trend, condition, key species composition, and productivity could be expected to remain constant or improve slightly.

ANALYSIS OF IMPACTS TO SOIL UNDER ALTERNATIVE E

Introduction

The soil would be affected by changes in ground cover, soil surface disturbance, soil compaction, and water infiltration. These factors all influence the soil erosion. Changes to the soil occur either directly or indirectly through changes in the vegetation resource. For example, increases in levels of use directly affect the soil by increasing livestock trampling which results in soil compaction and heavier plant utilization which, in turn, decreases vegetation ground cover.

Increases in soil erosion generally follow decreases in vegetation production or a decline in range condition. The cumulative effect of these changes will be analyzed as they relate to soil erosion. Specific values for the anticipated changes in soil erosion cannot be determined because of the absence of suitable predictive models and the large number of variables such as climatic factors encountered under field conditions. Correlation of soil erosion rates and vegetation types in this analysis is inadequate due to a lack of detailed soils information over much of the Mountain Valley Planning Area.

Soil Erosion

Changes in the Vegetation Resources. Implementation of this alternative would adversely affect vegetation on 86 percent of the planning area. As has been discussed, a decline in vegetation would mean less soil cover to decrease raindrop impact and less root development to decrease soil compaction and increase water infiltration. These factors would lead to an increase in soil erosion.

Vegetation would respond adversely to the higher level of use on 86 percent of the planning area. Trend in range condition would change from static or improving to declining. This would cause soil erosion to increase due to less soil surface cover, greater soil compaction, and less water infiltration.

Level of Use. Range condition would change from good to fair on 147,881 acres and from fair to poor on 248,878 acres within a 20-year period, as a result of an increase in the level of use. A decline in the range condition leads to an increase in soil erosion. About 7 percent of the planning area presently in poor condition should remain constant. Range condition is good (37,696 acres)

or fair (29,183 acres) on those areas presently grazed at preference level, and that level of use would not change. Therefore, soil erosion is expected to remain unchanged.

Utilization of vegetation would increase from the current average (60 to 80 percent) to some higher level. The increase in the level of use would increase the amount of trampling and, thus, reduce soil erosion.

Areas of Severe and Critical Erosion Condition. The 57,138 acres in severe and critical erosion condition create special problems for proper soil management. In the short term, grazing would be increased on 49,453 acres of these areas, and it is expected that the current rate of soil erosion would increase as the degree of livestock trampling is increased. Also, in the short term, the grazing level would not change on 7,685 acres; therefore, conditions would remain unchanged.

Riparian Areas

Most soils in riparian areas are currently eroding. None of the riparian vegetation would be fenced to exclude livestock (except for 3 miles presently fenced on Otter Creek). Increases in livestock, especially cattle, would keep the soil condition in its present poor state.

Unavoidable Adverse Impacts

There would be an unquantifiable deterioration in soil condition with increases in soil erosion.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Implementation of this alternative would cause greater soil erosion and deteriorated soil condition in the short and long terms. Soil productivity would decline in the long term.

Irreversible or Irretrivable Commitment of Resources

There would be an irreversible loss of soil productivity on areas where heavy erosion is allowed to continue. There would be an irretrievable annual loss of soil due to soil erosion.

Conclusion

Soil erosion would increase on 86 percent of the planning area and would remain the same or improve on 14 percent.

ANALYSIS OF IMPACTS TO WATER UNDER ALTERNATIVE E

Introduction

Changes in vegetation and utilization affect soil erosion rates, sediment yield, and soil compaction. These factors, in turn, affect water infiltration and water quality. Due to their strong interrelationship, these factors are discussed together.

Water Quality and Quantity

Utilization of vegetation would increase from the current average use (60 to 80 percent) to some higher level. There would be no changes in existing grazing treatments, vegetation modification, or any range developments. The vegetation would respond adversely to the higher level of use on 86 percent of the Mountain Valley Planning Area. Trend in range condition would change from static or improving to declining. Soil erosion rates would decline and soil erosion would increase due to less soil surface cover and greater soil compaction. Water runoff would increase and infiltration would decrease on the planning area. This would degrade the water quality of overland flow to streams that would occur during spring snowmelt or heavy rain events. As utilization is increased, coliform bacterial counts would increase and unacceptable limits would probably be reached.

Riparian Areas

Although no comprehensive studies have been completed on streambank areas in the planning area, it is expected that overutilization has left riparian areas in a deteriorated state. None of the riparian vegetation would be fenced to exclude livestock (except for 3 miles presently fenced on Otter Creek). Increases in livestock, especially cattle, would keep the stream condition in its present poor state. This would further reduce water quality, eliminate streambank shrubs, increase soil compaction, accelerate erosion, increase water temperature, break down streambanks, and increase dissolved and suspended solids.

Livestock would consume 11,908,200 gal/yr (22.5 acre-feet) of water in the long term. This would be an decrease of 3,945,600 gal/yr (7.5 acre-feet) of water that would be unavailable for other uses.

Unavoidable Adverse Impacts

An unquantifiable deterioration in water quality would occur due to increases in soil erosion.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Implementation of this alternative would cause greater soil erosion and deteriorated water quality in the short and long terms.

Irreversible and Irretrievable Commitment of Resources

There are no irreversible commitments of the water resource. There would be an irretrievable localized and short-term decrease in water quality due to increases in livestock. Water consumed by livestock would be lost to other uses.

Conclusion

On 86 percent of the planning area, water infiltration and water quality of overlard runoff would be degraded as a result of increased utilization, decreased vegetation, and soil condition. There would be no change on 14

percent of the planning area. Increases in livestock would keep the stream condition in its present poor state.

ANALYSIS OF IMPACTS TO ANIMAL LIFE UNDER ALTERNATIVE E

Introduction

Increasing the existing numbers of livestock on 88 percent of the Mountain Valley Planning Area, maintaining the existing situation on 1 percent of lands currently unallocated, and maintaining the existing livestock use on the remaining 11 percent of the planning area are specific actions of this alternative that would change vegetation. These changes in vegetation would affect terrestrial and aquatic animals by influencing the diversity, amount, and availability of food, cover, and water quality. In this section, the analysis of these changes in the habitat is related to the effects on current population levels of major species in the area.

Mule Deer

This alternative proposes to increase livestock utilization to preference levels on 88 percent of the planning area and to keep the utilization of big game static areawide. The proposed increase in grazing would overobligate the forage. The carrying capacity of the deer winter range would decline from the existing capacity. This would lead to a decrease in grazing and browsing animals. The amount of this decrease is unknown because a balance between livestock and big game is necessary to obtain optimum range conditions. As stated by Scotter (1980), "Both livestock and wild ungulate pressure may be necessary for balanced use of browse and herbaceous forages to maintain plant communities production for each kind of animal."

The end result for deer would be a deteriorated habitat as a result of a decrease in the available forage in the short and long terms. Deer populations (17,933 animals) would have winter losses or would need to be reduced to the carrying capacity of forage.

Antelope

The proposed increase in livestock use would result in a deterioration of antelope habitat quality by decreasing plant diversity, quantity of food and water, and increasing competition from livestock. In the short and long terms, there would be a deterioration in antelope habitat, with a corresponding but unknown decrease in the current antelope population (96 animals).

Elk

The result of increased livestock numbers would be deteriorated habitat quality and quantity in the short and long terms, with a corresponding decrease in the current elk population (656 animals). The amount of this decrease is unknown and would depend on the rate and amount of the reduction in the existing carrying capacity.

Endangered Utah Prairie Dog

The proposed increase of livestock and continued season of use in the Cedar Grove Allotment would greatly deteriorate prairie dog habitat by

eliminating the available succulent forage needed for providing milk for their young. This would occur since early and late spring use by livestock is detrimental to prairie dog habitat and, consequently, to the prairie dog population (Crocker-Bedford, 1976).

It is the biological opinion of the USFWS that spring livestock use could be detrimental to the health of the endangered Utah prairie dog (see Appendix III-5b).

Sagegrouse

The increase in livestock numbers on the Cedar Grove Allotment would be detrimental to sagegrouse because of an increase in sheep-sagegrouse competition for critical succulent vegetation in spring brooding areas. This succulent forage is needed for growth and survival of broods (Jarvis, 1974). It is anticipated that deteriorated habitat would relate to decreased population levels.

Fish and Aquatic Animals

Under this alternative, 30 percent more vegetation would be used by livestock. This increased utilization is above available forage production.

Because implementation of this alternative would be detrimental to 85 percent of the vegetation in the planning area, riparian vegetation and fish habitat would decline. This alternative would lead to a further downward trend in fishing streams that are presently in fair condition and would reduce fish populations. Because no range improvements would be implemented, riparian vegetation would not be improved. Streambank soil erosion and streambank sedimentation, pool quality, and water quality deterioration would result.

Summary

Because of the predicted decrease in vegetation production, this alternative would deteriorate big game, sagegrouse, and Utah prairie dog habitat by decreasing the existing supply of food, cover, and water over the short and long terms.

The initial allocation of vegetation to big game provided by this alternative would probably not be sufficient after 1 to 2 years and losses due to insufficient forage could occur. Sagegrouse, Utah prairie dog, and fish populations would be expected to decrease; however, the amount is unquantifiable with available data.

Unavoidable Adverse Impacts

There are significant unavoidable adverse impacts to terrestrial or aquatic animal life since there would be a loss of carrying capacity.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

There would be a short- and long-term loss of animal habitat. This would result in an unknown loss of big game, sagegrouse, the endangered Utah prairie dog, and fish.

Irreversible or Irretrievable Commitment of Resources

There are no significant irreversible impacts to terrestrial or aquatic animal life. Irretrievable commitments would be the loss of forage and productivity of range plants as a result of overobligation. This would result in an eventual but unquantifiable loss of big game, sagegrouse, endangered Utah prairie dog, and fish populations.

Conclusion

Population levels of big game, the endangered Utah prairie dog, sagegrouse, and fish would decrease.

ANALYSIS OF IMPACTS TO LIVESTOCK GRAZING UNDER ALTERNATIVE E

Introduction

Specific action items that affect livestock grazing are the levels of use proposed and grazing treatments. There are no allotment combinations or range developments proposed by this alternative. The level of use is proposed at the preference level that currently exists.

Utilization of vegetation (key plant species) by livestock would increase above the present heavy use (60-80 percent). Initially, no livestock grazing would be allowed on 1 percent (5,121 acres) of the Mountain Valley Planning Area. Livestock grazing would be reduced by 1 AUM from the present level on less than 1 percent (2,339 acres); maintained at present levels on 11 percent (53,890 acres); and increased 32 percent over present levels on 88 percent (438,622 acres) of the planning area.

Changes in livestock grazing resulting from the changes in the action items will be assessed as they relate to impacts on the livestock industry and individual operators. Range developments and changes to the present grazing treatment are not proposed.

Level of Use. This alternative proposes to increase the level of use to the preference level. Sixty to 80 percent of vegetation would be used on 95 percent of the planning area.

The projected changes from existing actual AUMs use are given below by ranch category (size of operation and class of animal).

		Total for Each Ranch Category		
	Number of	AUMs	Changes in AUMs	
Ranch Category	Operators	Existing Use	Initial	Long Term
Small Sheep Operators	6	136	+61	+61
Large Sheep Operators	35	18,807	+8,195	+8,195
Small Cattle Operators	42	3,209	+712	+172
Medium Cattle Operators	14	1,506	+1,186	+1,186
Large Cattle Operators	14	4,324	+1,558	+1,558

Source: Appendixes II-1 and III-6.

The implementation of Alternative E would cause the following:

1. An initial 30-percent increase from 27,982 to 39,694 AUMs in the overall livestock level of use.

2. Livestock use would not be allowed on five allotments currently unallocated.

3. Livestock use would be reduced on one allotment, involving one operator.

4. The current livestock level of use (2,702 AUMs) would not change on 16 allotments. The level of use adjustments proposed by this alternative would have no effect on 21 of the 167 different livestock operations.

5. There would be an initial increase of 11,713 AUMs in the livestock level of use on 68 allotments, (from existing 25,187 to 36,900 AUMs). This would affect 145 different grazing operations.

Unavoidable Adverse Impacts

Livestock grazing would be adversely affected by increased grazing on 39 percent of the planning area in the initial period. As livestock weights would be reduced from lack of forage, this would affect 167 livestock operations since rangelands would be further deterioriated.

Relationship Between Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

Implementation of this alternative would cause an initial increase in livestock grazing. This would, in turn, reduce the value and benefits of the rangeland to the affected livestock operators since rangelands would be further damaged. There would be an increase in grazing from the current situation. However, as the vegetation deteriorates forage production for livestock would decrease, and rangelands would become less valuable for watershed, recreation, and other uses.

Irreversible or Irretrievable Commitment of Resources

There are no irreversible commitments made by this alternative. There would be an irretrievable loss of vegetation between the potential production level and that which would occur on the deteriorated range resulting from this alternative.

Conclusion

Livestock operations would remain the same or be increased 30 percent from the present situation.

ANALYSIS OF IMPACTS TO RECREATION UNDER ALTERNATIVE E

Introduction

As discussed in Alternative A, impacts would occur to recreation when management and/or allocation would alter numbers of deer, antelope, elk, and sagegrouse available for hunting, and trout available for fishing.

Hunter and Fisherman Success and Days

There would be an unquantified decrease in deer, antelope, and elk hunter success and hunter days provided by the Mountain Valley Planning Area initially and over the long term.

The potential decrease in sagegrouse numbers would result in an unquantified decrease in sagegrouse hunter success and hunter days provided by the planning area, initially and over the long term.

The potential decrease in trout population would result in an unquantified decrease in fisherman success and fisherman days provided by the planning area initially and over the long term.

Unavoidable Adverse Impacts

There would be an overall decrease in big game and sagegrouse hunter days and in fisherman days provided by the planning area initially and over the long term.

Relationship Between Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

The decrease in hunter and fisherman days provided by the planning area during the 20-year production period would continue into the long term.

Irreversible and Irretrievable Commitment of Resources

None.

Summary

Alternative E would result in the following:

1. There would be an unquantified decrease in deer, antelope, and elk hunter days provided by the planning area initially and over the long term.

2. There would be an unquantified decrease in sagegrouse hunter days provided by the planning area initially and over the long term.

3. There would be an unquantified decrease in fisherman days provided by the planning area initially and over the long term.

Conclusion

There would be an unquantified decrease in big game and sagegrouse hunter days and in fisherman days provided by the planning area initially and over the long term.

ANALYSIS OF IMPACTS TO SOCIOECONOMICS UNDER ALTERNATIVE E

Introduction

In analyzing ranch income impacts due to changes in BLM permits, two scenarios are used: (1) feed change; and (2) herd change. However, the only way ranchers could make increased use of permits would be to increase their herd size and, if necessary, buy additional feed (see Socioeconomics Section for Alternative A). Changes in the number of AUMs could also impact ranch capital by means of the "market value" of the permit. This analysis attempts to quantify economic impacts to the average ranch in each category, but may not reflect actual impacts to individual ranchers.

Data for the Six County Economic District will be analyzed to project regional income, output, and employment impacts.

Impacts

The "worst case" economic impacts to the various ranch categories and the region are summarized in the following table. There would be no change in BLM permits or their capital value to ranchers under this alternative, and the major part of the impacts would occur in the short term. (Partial budgets for all ranch categories are listed in Appendix IV-4.)

Operators	Present Net Cash Income	Percent Change in Ranch Income Net Cash Income
Sheep Operators		
Small (1-99)	$2,564	+41.9
Large (200+)	30,447	+40.8
Cattle Operators		
Small (1-99)	1,625	-69.4
Medium (100-199)	7,785	+43.9
Large (200+)	17,493	+30.8

Source: Appendix IV-4.

Under this alternative, the small cattle category is the only one to show a negative income impact, showing a net loss of 69.4 percent ($1,128). The medium cattle category is projected to show a net increase of 43.9 ($3,423), and the large cattle category shows a 30.8-percent increase. The large and small sheep categories show gains of 40.8 percent and 41.9 percent respectively. Permit sizes and catital values would not change.

Regional Impacts

Regional impacts due to changes in the livestock industry and big game hunting are presented below:

Regional Impacts	Value and Percent Change From Existing Level		
	Total Gross Output[a]	Labor[b]	Income[a]
Livestock Grazing	+0.6 ($2,990.3)	+0.7 (108.4)	+0.6 ($702.6)
Big Game Hunting[c]	--	--	--

Source: FS and BLM.

[a]Value in thousands (1,000s) of dollars.

[b]Value in man years.

[c]Decrease in hunter days is unquantifiable, therefore negative economic impacts are unknown.

The economic impacts from the increased livestock grazing would have a significant positive impact on the regional economy, while any impacts from changes in big game numbers would have negligible regional economic impacts.

Attitudes and Expectations

Conservation, preservation, and recreational groups and individuals would contest continued present management programmatic grazing as unplanned use of public lands in both the short and long terms. Deteriorating relationships with the BLM would manifest themselves with the threat, or actual filing, of legal actions. Short-term positive attitudinal and lifestyle impacts would occur to operators on 68 allotments, whose increased use would be from licensed use to preference. Short-term positive attitudinal impacts would also be experienced by operators on 12 allotments, who would maintain their current AUM levels. Both categories of livestock operators would regard a continued present management alternative as less land use control from outside sources.

Unavoidable Adverse Impacts

None.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Short-term use of forage at the rate exceeding its capacity provides initial income at a higher rate than the rangeland resource can maintain. The income would eventually decline.

Irreversible or Irretrievable Commitment of Resources

None.

Conclusion

This alternative would have a significant positive impact on net annual ranch income. The capital value of permits would not be impacted. Regional economic impacts appear to be slightly positive.

What would be perceived as unplanned public lands management would be contested by conservation groups. Livestock operators would view this as less control from outside sources.

ALTERNATIVE F: ADJUST SPRING LIVESTOCK USE

ANALYSIS OF IMPACTS TO VEGETATION UNDER ALTERNATIVE F

Introduction

Vegetation utilization would not exceed 50 percent of key plant species as discussed previously in Alternative A; however, an additional limit of 25 percent of spring use for livestock would be imposed by the alternative. An initial 11-percent reduction in the overall level of use is proposed by this alternative. The livestock level of use would be eliminated on 13,324 acres (3 percent), reduced from present levels on 295,349 acres (59 percent), maintained on 173,823 acres (35 percent), and increased on 17,476 acres (3 percent) of the Mountain Valley Planning Area. In the long term, livestock use would increase a predicted 47 percent and big game use would increase 29 percent. Grazing treatments would be implemented on all 90 allotments, and no combination of allotments is proposed. This would necessitate changing the existing situation on the entire planning area. Each grazing treatment would define the season of use and length of the grazing period.

The allotments where grazing would be initially eliminated would be restored to grazing at 34 percent greater than the current level in the long term.

Vegetation would be modified on 27,610 acres by chaining, spraying, burning, plowing, and seeding, where necessary. Riparian vegetation along 40 miles of stream (488 acres) would be grazed except where proposed management fences would be placed to protect the riparian areas. (See tables 2-1, 2-2, and 2-3 for more detail of the proposed alternative action.)

Vegetation Production and Composition

Level of Use. Overutilization of vegetation is currently a problem in the planning area (see Alternative A for a more detailed discussion).

Reducing the degree of average annual utilization to 50 percent and limiting spring use by livestock to 25 percent of key plant species would improve vegetation production, composition, and plant vigor. The improvements in plant vigor and reproduction due to the initial reductions in utilization and level of use would have a positive effect on vegetation production and composition.

The proportion of livestock to big game use proposed under this alternative in the long term would cause some change in vegetation composition. Composition would change since more utilization would be made on browse and less on grasses. The change would be toward more perennial grass, fewer annual weeds, and greater species diversity (Harper, 1969). This gradual change would, in part, be due to reduced spring use. The effect would be areawide, with measureable increases in vegetation production continuing until good range condition was reached. The magnitude of change in vegetation production directly attributable to the proposed reduction in utilization is predicted to be about 8,267 AUMs.

Grazing Treatments. Of the 90 allotments in the planning area, 73 are grazed every year by livestock in the spring and 27 of these are also used by big game during the same period. Currently, there are no allotments in the planning area where spring use is rotated, alternated, or deferred.

This alternative proposes that the 90 allotments maintain their present boundaries, and that grazing treatments be initiated as follows: treatment 1 (no spring grazing) be initiated on 11 allotments (38,970 acres), and treatment 3 (limited spring use) be initiated on 73 allotments (447,678 acres). Six allotments would not be grazed (treatment 6) by livestock initially on 13,324 acres but, in the long term, all allotments would be grazed.

The magnitude of change in vegetation production directly attributable to the proposed grazing treatments is predicted to be an increase of 14,210 AUMs in the long term. The grazing treatment action proposed above would provide rest to vegetation during critical plant growth periods on 90 percent of the planning area. This would improve vegetation composition and diversity much the same as discussed in Alternative A.

Vegetation Modification. This alternative proposes vegetation modification in pinyon-juniper and sagebrush types by means of chaining, burning, plowing, spraying with herbicide 2,4-D, and drilling or interseeding with well adapted productive plant species (see table 2-2).

In this alternative, approximately 6 percent (12,200 acres) of the sagebrush community and 8 percent (15,410 acres) of the pinyon-juniper community would be modified. The total vegetation modification would occur on 6 percent (27,610 acres) of the total planning area.

The amounts and kinds of vegetation modification proposed are given below along with expected changes in vegetation production and composition. The exact percent of change in composition from pinyon-juniper and sagebrush to other woody shrubs (browse), forbs, and grasses cannot be predicted because of variation in the range sites. Table 2-2 shows the range development program for this alternative. (See discussion in Alternative A for more details.)

1. Chaining on 15,410 acres:

   Production would increase to 0.3 AUMs per acre, or 4,623 AUMs. Composition is predicted to change initially from pinyon-juniper and sagebrush to more desirable forage grass and browse species.

2. Plowing and seeding on 1,000 acres:

   Plowing and seeding on 1,000 acres would produce an increase of 1 AUM per acre, or 1,000 AUMs. Composition would be changed from sagebrush to more desirable grass and browse species.

3. Browse interseeding on 200 acres:

   In this alternative, 200 acres would be treated and an increase of 0.23 AUMs per acre or 46 AUMs would be produced. The predicted change in composition would favor desirable browse species. Existing composition would be improved by interspaces being filled with more browse plants.

4. Spraying on 2,600 acres:

   This modification would produce increases of approximately 720 AUMs, about 500 lbs. of air dried forage per acre or an increase of 0.6 AUMs per acre. Composition is predicted to change from predominantly 40 to 50 percent big sagebrush to 10 percent sagebrush with more grasses and browse species.

5. <u>Prescribed burning on 1,900 acres:</u>

Vegetation is expected to produce 0.5 additional AUMs per acre on the burned sites, or a total of 950 AUMs. Composition of vegetation is predicted to change initially from predominantly a sagebrush type to a grass-browse-forb range.

6. <u>Contour furrowing and seeding on 6,500 acres:</u>

Contour furrowing and seeding would produce an increase of 3,250 AUMs in the long term, or about 0.5 AUMs per acre. Composition would not be altered from the present situation, with the exception of grasses which would become more abundant on disturbed furrow areas.

The combined effect of the vegetation modifications on vegetation would be to increase production by 10,589 AUMs in the long term.

<u>Riparian Vegetation</u>

This alternative proposes that 71 miles of fence be installed to manage livestock. Presently, 3 miles of fences exist along Otter Creek. Fencing would be installed and improved to help exclude grazing from riparian zones where possible, but specific fencing for riparian areas is not planned. Within 2 to 3 years after completion of the fencing, there should be improvement in the condition of riparian vegetation because of the initial reduction in livestock, especially cattle. The predicted future increases in livestock grazing could reverse any improvements within a short period of time. As suggested in Alternative A, the only way to solve the riparian vegetation deterioration problems associated with grazing livestock is to fence areas that are of critical concern.

<u>Vegetation Condition and Trend</u>

Changes in the proposed level of use, grazing treatments, range modification, and riparian vegetation each affect range condition and trend. Therefore, this analysis assesses the combined effects of these changes on condition and trend.

The reduction in utilization and implementation of grazing treatments in conjunction with the 27,610 acres of proposed vegetation modification and support facilities (water troughs, spring developments, fences, etc.) would improve the range condition and move trend upward in the planning area. The range site would be best suited for livestock and big game when range condition is good and the trend static. This would be expected to occur within the 20-year planning period after the alternative was fully implemented.

It is projected that declining trend would be reversed by improved plant vigor and accelerated growth and reproduction. This, in turn, would improve range condition from poor to fair on 32,200 acres, and from fair to good on 280,784 acres within a 20-year period. All ranges currently in good condition (186,988 acres) would remain in their present condition.

Summary

Changes in levels of use, grazing treatments, and vegetation modification would provide an increase in AUMs. Currently, vegetation produces 38,268,000 lbs. of air dried forage (47,835 AUMs) in the planning area. It is predicted that within 20 years after all proposed changes have been implemented and range developments completed, 64,720,800 lbs. of air dried forage (80,901 AUMs) would be produced. This amount of forage exceeds the amount currently produced by 26,452,800 lbs. (33,066 AUMs). The end result is a range productivity increase of about 0.07 AUMs per acre (the highest production proposed by any of the alternatives). As vegetation production is increased, range conditions would also improve from fair to good and from poor to fair. The riparian vegetation would likewise improve, especially where fencing is provided along riparian zones.

Unavoidable Adverse Impacts

There would be no unavoidable adverse impacts to the range vegetation.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

The actions necessary to implement this alternative would cause an initial increase in the rangeland vegetation. Over a period of 20 years, the improvements in the vegetation resource, production, and condition would substantially improve the quality of rangeland and increase its productivity.

Irreversible or Irretrievable Commitment of Resources

There are no irreversible commitments of the vegetation resource. There would be an annual irretrievable consumption of vegetation by big game and livestock and a short-term irretrievable commitment of pinyon-juniper, sagebrush, and other plant species caused by the 27,610 acres of proposed vegetation modification.

Conclusion

Implementation of this alternative would be beneficial to vegetation on the entire planning area (499,972 acres). Vegetation production would increase and range condition and trend would improve.

ANALYSIS OF IMPACTS TO SOILS UNDER ALTERNATIVE F

Introduction

The soil would be affected by changes in ground cover, soil surface disturbance, soil compaction, and water infiltration. These factors all influence the soil erosion as discussed in Alternative A.

Decreases in soil erosion generally follow vegetation production increases and improvement in range condition. The cumulative effects of these changes will be analyzed as they relate to soil erosion.

Soil Erosion

Changes in the Vegetation Resources. Vegetation production would increase and range condition and trend would improve. As has been discussed, an improvement in vegetation would mean more soil cover to decrease raindrop impact and more root development to decrease soil compaction and increase water infiltration.

Vegetation production and range condition would improve from poor to fair on 32,200 acres or from fair to good on 280,748 acres within a 20-year period. An improvement in range condition leads to a decrease in soil erosion. All range currently in good condition (186,988 acres) would remain constant, with soil erosion rates remaining relatively slight.

Level of Use. Utilization of vegetation would be reduced to 50 percent and spring use by livestock would be limited to 25 percent of key plant species. Plant vigor would improve and there would be more perennial grasses and fewer annual weeds. The decline in utilization would decrease the amount of trampling and thus reduce soil erosion.

Grazing Treatments. Implementation of grazing treatments and vegetation modification would also lead to improved range condition. This would cause soil erosion to decline.

Vegetation Modification. Vegetation modification would not cause adverse effects to the soil in the short term, except for plowing on 1,000 acres and prescribed burning on 1,900 acres. In the long term, beneficial results to the soil are expected from all vegetation modifications.

Areas of Severe and Critical Erosion Condition. The 57,138 acres in the severe and critical erosion condition create special problems for proper soil management. In the short term, grazing would be increased on 11 percent (6,214 acres), and it is expected that the current soil erosion rate would further deteriorate. Also, in the short term, grazing would be maintained at existing levels on 24 percent (13,757 acres), reduced on 55 percent (31,677 acres), and eliminated on 15 percent (5,496 acres). The poor soil condition would remain unchanged or improve as the degree of livestock utilization is reduced. However, some of the current situation is due to the inherent nature of the soil parent material and the soil would not respond to the reduction in livestock trampling. Of the total 19 allotments that are in this condition, 11 would receive rest grazing treatments. These would be changed to alleviate adverse effects of livestock grazing.

Riparian Areas

Most soils in riparian areas are currently eroding. Fencing would be installed to help exclude grazing from riparian areas where possible but specific fencing for riparian areas is not planned. The long-term increases in livestock, especially cattle, could reverse any improvements or keep the soil condition in its present poor state.

Unavoidable Adverse Impacts

There would be no unavoidable adverse impacts to soil resources.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Implementation of range developments and certain identified vegetation modifications would cause short-term localized soil disturbance and increased soil erosion. Enhancement of long-term productivity of the soil resource would occur as a result of increased stabilization of the soil.

Irreversible or Irretrievable Commitment of Resources

There would be an irreversible loss of productive soil on areas were heavy erosion is allowed to continue. There would be an irretrievable localized loss of soil due to construction of range developments and vegetation modifications.

Conclusion

Soil erosion would decrease on the planning area.

ANALYSIS OF IMPACTS TO WATER RESOURCES UNDER ALTERNATIVE F

Introduction

Changes in vegetation and utilization affect soil erosion, sediment yield, and soil compaction. These factors, in turn, affect infiltration and water quality. Due to their strong interrelationships, factors are discussed together.

Water Quality and Quantity

Utilization of vegetation would be reduced 50 percent and spring use by livestock would be limited to 25 percent of key plant species. Plant vigor would improve, promoting key plant growth and reproduction. Soil erosion would decrease on the Mountain Valley Planning Area as a result of increased soil cover and decreased soil compaction. Water runoff would decrease and infiltration would increase on the planning area. This would improve the water quality of overland flow to streams that would occur during spring snowmelt or during heavy rain events. As utilization is reduced, coliform bacterial counts would be reduced, and unacceptable limits could still be reached.

Implementation of grazing treatments would reduce soil erosion and water runoff (see Soil section, Alternative A). This would also improve the quality of overland flow to streams.

Vegetation modification would not cause adverse impacts to the water resource in the short term except for plowing on 1,000 acres and prescribed burning on 1,900 acres. In the long term, beneficial results to the water are expected from all vegetation modifications (for a detailed discussion see Water section, Alternative A).

Riparian Areas

Although no comprehensive studies have been completed on streambank areas in the planning area, it is expected that overutilization has left riparian areas in a deteriorated state (see Water Resources section, Alternative A).

None of the riparian vegetation would be fenced to exclude livestock, although fencing installed for pasture systems would protect riparian areas where possible. The long-term increases in livestock, especially cattle, could reverse any improvements or keep the stream condition in its present poor state. This would include or further reduce water quality, eliminate streambank shrubs, increase soil compaction, accelerate erosion, increase water temperatures, break down streambanks, and increase dissolved and suspended solids.

Livestock would consume 13,877,400 gal/yr (26 acre-feet) of water in the long term. This would be an increase of 5,914,800 gal/yr (11 acre-feet) of water that would be unavailable for other uses.

Unavoidable Adverse Impacts

There would be no unavoidable adverse impacts to water resources.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Implementation of range developments and vegetation modifications would cause short-term localized increased sediment yield and increased water runoff. Enhancement of long-term productivity to the water resource would occur as a result of increased stabilization of the soil and decreased utilization.

Irreversible and Irretrievable Commitment to Resources

There are no irreversible commitments of the water resource. There would be an irretrievable localized and short-term decrease in water quality due to construction of range developments. Water consumed by livestock would be lost to future uses.

Conclusion

Water infiltration and water quality of overland runoff would improve as a result of reduced utilization, improved vegetation, and soil condition. The lack of fencing on riparian areas and increases in livestock could reverse water quality improvements in streams or keep the stream condition in its present poor state.

ANALYSIS OF IMPACTS TO ANIMAL LIFE UNDER ALTERNATIVE F

Introduction

Changing the existing numbers and kinds of livestock, reducing the utilization of vegetation, implementing grazing treatments, and developing range projects are specific actions of the proposal that would cause changes to vegetation. These changes would affect terrestrial and aquatic animals by influencing the diversity, amount, and availability of food, cover, and water. In this section, the analysis of these changes in the habitat is related to the effects on current population levels of major species in the Mountain Valley Planning Area.

Mule Deer

This alternative would decrease vegetation utilization by reducing the initial livestock and big game levels of use. A balance between livestock and big game is necessary to obtain optimum range conditions. According to Scotter (1980), "Both livestock and wild ungulate pressure may be necessary for balanced use of browse and herbaceous forages to maintain plant communities production for each kind of animal." The initial allocation would require a decrease of 164 AUMs for deer use and would not exceed the vegetation available.

Initially, six allotments (13,324 acres) of critical deer winter range would not be grazed; treatment 3 (adjusted spring use) would be initiated on 73 allotments (447,678 acres); and treatment 1 (no spring grazing) would be initiated on 11 allotments (38,970 acres). Livestock would make limited use of spring season grasses. Grass vigor would be enhanced. The limited use period would allow maximum grass production. This increased grass could deteriorate the habitat quality for deer toward the end of the long term and beyond.

Proposed vegetation modification of 12,200 acres of sagebrush and 15,410 acres of pinyon-juniper could improve deer winter range. By chaining, burning, plowing, spraying, drilling, and interseeding this rangeland, a long-term increase of 10,589 AUMs is expected to occur. Of these AUMs, 1,226 would be allocated to deer. Twenty-eight water developments would provide additional sources for better distribution of these animals. The construction of 71 miles of fence would have an unknown detrimental effect on deer.

The end result for deer would be a decrease in the available forage in the short term from 15,460 AUMs (17,933 deer) to 15,296 AUMs (17,743 deer), a decrease of 190 deer; and a long-term increase to 20,919 AUMs (24,266 deer), a long-term increase of 6,333 deer above the current population.

Antelope

By limiting spring livestock utilization and implementing grazing treatments, plant diversity would increase. For example, Holmgren (1976) states that non-use from livestock would favor the expression of grass species. The 5,500 acres of vegetation modification in allotments used by antelope would stimulate plant diversity since forbs used by antelope would soon become re-established (Stoddard et al., 1975). This diversity is advantageous to antelope as discussed in Alternative A. Eleven reservoirs placed in antelope range would improve existing habitat by extending the range of antelope use to other areas that have previously been unused because of lack of water. Thirty-two miles of fence in the allotments used by antelope could have an unknown detrimental affect on them.

The end result for antelope would be an improvement in habitat quality by increasing plant diversity and water quantity. However, in the short term, there would be no increase in antelope population levels. In the long term, antelope use would increase from 120 to 199 antelope AUMs. This would provide for an increase of 63 antelope over the next 20 years. This would result in a static situation for antelope because increases in forage production would be allocated to livestock and deer.

Elk

Reducing the livestock utilization and implementing grazing treatments would increase plant diversity and would be beneficial to elk. Vegetation modification of 27,610 acres would also increase the number of available plant species by chaining, burning, plowing, spraying, seeding, and interseeding. Placement of 28 water developments in elk range would redistribute these animals and allow them to graze areas that have previously been lightly used due to lack of water. The construction of 71 miles of fence would have an unknown detrimental impact on elk.

The end result for elk would be improved habitat quality and quantity in the short term. However, there would be an initial reduction of the allocated elk AUMs from 1,726 (656 elk) to 1,711 (650 elk), for a decrease of 6 elk, or essentially a static situation. In the long term, there would be an increase to 2,237 AUMs (850 elk), an increase of 198 elk over current levels during the next 20 years. This would be a static situation.

Endangered Utah Prairie Dog

The proposal to initially limit spring livestock use in the Cedar Grove Allotment would enhance the habitat by providing succulent forage and limiting early and late spring use. Crocker-Bedford (1976) states that livestock and prairie dogs compete directly for spring grasses. The long-term increase in livestock numbers, combined with the current season of spring use, could be detrimental because of competition for forage while the young are being raised.

It is the biological opinion of the USFWS that spring livestock use could be detrimental to the health of the endangered Utah prairie dog (see Appendix III-5b). The initial effects on the prairie dog population would be positive.

Sagegrouse

The proposed change in the duration of spring use on the Cedar Grove Allotment could be beneficial in the short term because sheep-sagegrouse competition for critical succulent vegetation in spring brooding areas would decrease. This succulent forage is needed for growth and survival of broods (Jarvis, 1974). It is anticipated that improved habitat would relate to increased population levels. The effect of the proposed long-term increase in livestock numbers, combined with the spring season of use, is unknown.

Fish and Aquatic Animals

This alternative would provide for the greatest increase in total vegetation, especially grass, and improvement in range condition for the entire planning area. Riparian vegetation would be somewhat improved initially (short term), but would deteriorate in the long term if left unfenced. Streamside vegetation, cover, bank stability, and other biotic factors important to a fishery would also show a reduction in quality.

A higher level of use proposed in the long term, expecially by cattle, would cause deterioration. This would reduce the fish habitat on approximately 16 miles of 11 streams.

The riparian vegetation would deteriorate on a long-term basis; consequently, the fish habitat would also show a reduction in quality, perhaps to a lower level than the current undesirable situation on 16 miles of fishing streams.

Summary

The initial allocation of vegetation to big game provided by this alternative would require that populations remain static or be reduced slightly. In the long term, there would be increased and improved habitat for deer, with a corresponding increase in population. For deer, there would be an initial allocation of 15,296 AUMs (17,743 deer), which would be a decrease of 190 deer below the existing level. There would be an allocation of 20,919 AUMs (24,266 deer) over the long term, an increase of 6,333 deer over the next 20 years. For antelope, there would be an initial allocation of 120 AUMs (96 antelope), which is the same as the current use. There would be 199 AUMs (159 antelope) available over the long term, which is an increase of 63 antelope over the next 20 years. For elk, there would be an initial allocation of 1,711 AUMs (650 elk), which would be two elk less than the current level. There would be 2,237 AUMs (850 elk) available over the long term, an increase of 198 elk over the next 20 years. The proposed allocations would keep elk and antelope at a static level.

Because of the predicted increase in vegetation production, this alternative would improve sagegrouse and Utah prairie dog habitat conditions by enhancing and expanding the existing supply of food, cover, and water over the short and long terms. However, this alternative has the potential, because of its tendency to grow grass, to be detrimental to the habitat of the above species.

Sagegrouse and Utah prairie dog populations would be expected to increase initially; however, the amount is unquantifiable with available data. The long-term impacts to sagegrouse would be undetermined if the proposal turned the ecosystem into predominantly grass. Prairie dog habitat would continue to improved in the long term. Fish habitat would be adversely affected in both the short and long terms and population would be expected to decrease.

Unavoidable Adverse Impacts

There would be no significant unavoidable adverse impacts to terrestrial or animal life. There would be a loss of fish production over the long term.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Over the short term, this alternative would basically be beneficial to big game, questionable for sagegrouse and prairie dogs, and detrimental to fish. Over the long term, the productivity of all animal life except elk could be curtailed because of the potential this alternative has to change the ecosystem to one dominated by grass.

Irreversible or Irretrievable Commitment of Resources

There are no significant irreversible impacts to terrestrial or aquatic animal life. Irretrievable impacts would include the fish population reduction over the long term.

Conclusion

Initially, population levels of big game would remain static while the endangered Utah prairie dog and sagegrouse would increase. In the long term,

big game and prairie dogs populations would increase while sagegrouse could decrease, depending upon the extent of grass conversion. Fish numbers are expected to remain static in the short term and decrease over the long term.

ANALYSIS OF IMPACTS TO LIVESTOCK GRAZING UNDER ALTERNATIVE F

Introduction

Specific action items that affect livestock grazing are the proposed levels of use, grazing treatments, and range developments. The level of use in the long term relates directly to the improvement in vegetation production predicted for the long term. There are no allotment combinations proposed by this alternative action.

Utilization of vegetation (key plant species) by livestock would be reduced from the present heavy use (60-80 percent) to 50 percent. Initially, livestock grazing would be eliminated on 13,324 acres (3 percent) of the Mountain Valley Planning Area. Livestock grazing would be reduced 22 percent from present levels on 59 percent (295,349 acres) of the planning area; maintained at present levels on 35 percent (173,823 acres); and increased 33 percent (17,476 acres) from present levels on 3 percent of the planning area.

Changes in livestock grazing resulting from the changes in the action items will be assessed as they relate to impacts on the livestock industry and individual operators.

Level of Use. Actual use in the planning area (figure 3-7), indicates that there has been a steady decline in the number of AUMs that livestock operators have used since about 1973.

There are 111 different livestock operators or individuals who run a total of 167 different livestock operations, each requiring a separate licensing authorization from the BLM.

In this alternative, the projected changes from existing actual AUMs used are given below by ranch category (size of operation and class of animal).

		Total for Each Ranch Category		
	Number of	AUMs	Changes in AUMs	
Ranch Category	Operators	Existing Use	Initial	Long Term
Small Sheep Operators	6	136	-30	+63
Large Sheep Operators	35	18,807	-1,781	+12,611
Small Cattle Operators	42	3,209	-491	+2,075
Medium Cattle Operators	14	1,506	-266	+1,596
Large Cattle Operators	14	4,324	-723	+5,222

Source: Appendixes II-1 and III-6.

The initial allocation under Alternative F would be 24,691 AUMs. Changes would be as follows:

1. An initial 12-percent reduction from 27,982 AUMs to 24,691 AUMs in the overall livestock level of use.

2. Eliminate livestock use on six allotments, involving 3,291 AUMs. This would affect 11 different grazing operations.

3. Reduce a total of 3,242 AUMs on 46 allotments. This would affect 104 different grazing operations.

4. Retain the current livestock level of use (12,309 AUMs) on 31 allotments; therefore, the level of use adjustments proposed by this alternative would not affect 47 of the 167 different livestock operations.

5. There would be an initial increase in the livestock level of use on seven allotments, involving 303 AUMs. This would be an increase from 606 to 1,515 AUMs. This would affect four different grazing operations. Five of these allotments are presently unallotted for livestock grazing.

6. The livestock level of use initially eliminated on six allotments would be restored in the long term. This involves 1,026 AUMs and 11 livestock operations.

7. Total change from initial to long term would be from 24,691 to 46,258 AUMs and affect 167 livestock operations and 111 operators.

Grazing Treatments. All allotments would have grazing treatments as proposed in table 2-3. Changes in season of use would be proposed on 25 allotments and affect 91 livestock operations. The short-term impact from this action would necessitate changing the livestock operators' routine and livestock grazing patterns.

The proposed grazing treatments such as reduced spring use would:

1. Alter the operators' livestock management practices.

2. Propose that all 90 allotments remain as they presently are, with changes in use levels only.

3. Propose changes in season of use on 84 allotments. This would affect 97 livestock operations, necessitate a change in patterns of use, and cause coordination impacts with private and National Forest lands.

Range Developments. The proposed range developments (vegetation modification and support facilities) on 84 allotments could require a commitment of funds and resources by the livestock operators and also require a 2-year period of non-use following vegetation modification.

Most of the range developments would aid livestock management by providing higher quality feed, more water, and better livestock distribution.

Unavoidable Adverse Impacts

Livestock grazing would be adversely affected by reducing grazing on 12 percent of the planning area in the initial period. This would affect 119

different livestock operations. There would also be a 2-year loss of grazing use following vegetation modification on 27,610 acres.

Relationship Between Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

The specific actions required to implement this alternative would cause an initial reduction in livestock grazing. This would, in turn, reduce the value and benefits of the rangeland to the livestock operators affected. In the long term, the initial situation would improve until there would be an increase in the grazing privileges.

Irreversible or Irretrievable Commitment of Resources

There are no irreversible commitments made by this alternative. There would be an initial irretrievable loss of 3,302 AUMs to 115 livestock operations.

Conclusion

The alternative would require a reduction in the grazing operations of 116 of the 167 livestock operations. Fifty-one livestock operators would remain the same or be increased slightly above the present situation.

ANALYSIS OF IMPACTS TO RECREATION UNDER ALTERNATIVE F

Introduction

Impacts would occur to recreation when management and/or allocation would alter numbers of deer, antelope, elk, and sagegrouse available for hunting, and trout available for fishing as discussed in Alternative A.

Hunter and Fisherman Success and Days

The initial decrease and long-term increase in deer numbers would result in an unquantified decrease in hunter success initially and an unquantified increase in hunter success over the long term. With the current hunter success ratio, the potential change in deer numbers would provide an initial decrease in deer hunter days from the 19,137 hunter days currently provided by the Mountain Valley Planning Area to approximately 18,814 hunter days. Over the long term, there would be an increase to approximately 23,727 hunter days.

There would be no initial change in antelope hunter success or antelope hunter days provided by the planning area. The potential increase in antelope numbers over the long term would result in an increase in hunter success over the long term. With the current hunter success ratio, the potential increase in antelope numbers would provide for a long-term increase in antelope hunter days from the five hunter days currently provided to eight hunter days.

The initial decrease and long-term increase in elk numbers would result in a decrease in hunter success initially and an unquantified increase in hunter success over the long term. With the current hunter success ratio, the potential change in elk numbers would provide for an initial decrease in elk hunter days from the 1,164 hunter days currently provided by the planning area to approximately 1,146 hunter days. Over the long term, there would be an increase to approximately 1,499 hunter days.

The initial increase in sagegrouse populations would result in an unquantified increase in sagegrouse hunter success and hunter days provided by the planning area initially. The long term impact is unknown.

Decrease in trout populations would result in a decrease in fisherman success and fisherman days initially and over the long term to the point where fishing opportunities would no longer be provided within the planning area.

Summary

Alternative F would result in the following:

1. There would be an initial decrease in big game hunter days from the 20,306 hunter days currently provided to approximately 19,965 hunter days. Over the long term, there would be an increase to 25,234 hunter days.

2. There would be an increase in sagegrouse hunter days provided by the planning area initially. The long term impact is unknown.

3. There would be a decrease in fisherman days initially and over the long term to the point where fishing opportunities would no longer be provided in the planning area.

Unavoidable Adverse Impacts

There would be an overall decrease in big game hunter days provided by the planning area initially. There would be a decrease in fisherman days provided by the planning area initially and over the long term to the point where fishing opportunities would no longer be provided with the planning area.

Relationship Between the Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

The overall increase in hunter days and decrease in fisherman days provided by the planning area during the 20-year production period would continue into the long term.

Irreversible or Irretrievable Commitment of Resources

None.

Conclusion

There would be an initial decrease but long-term increase in big game hunter days provided by the planning area. Sagegrouse hunter days would increase initially, but the long-term impact is unknown. Fisherman days would decrease initially and over the long term to the point where fishing opportunities would no longer be provided by the planning area.

ANALYSIS OF IMPACTS TO SOCIOECONOMICS UNDER ALTERNATIVE F

Introduction

In analyzing ranch income impacts due to changes in BLM permits, two scenarios are used: (1) feed change; and (2) herd change. However, the only way ranchers could make increased use of permits would be to increase their herd size and, if necessary, buy additional feed. Changes in the number of AUMs could also impact ranch capital by means of the "market value" of the permit. This analysis attempts to quantify economic impacts to the average ranch in each category, but may not reflect impacts on individual ranchers. Data from the Six County Economic District will be analyzed to project regional income, output, and employment impacts resulting from this alternative.

Ranch Impacts

The following summarizes the "worst case" economic impacts to the various ranch types and sizes. (The partial budgets for all ranch categories are listed in Appendix IV-4.)

Operators	Present Net Cash Income	Percent Change to Net Cash Income		Percent Change in BLM Permit and Capital Value	
		Initial	Long Term	Initial	Long Term
Sheep Operators					
Small (1-199)	$2,564	-9.3	+42.9	-22.1	+46.3
Large (200+)	30,447	-1.1	+62.8	-9.5	+67.1
Cattle Operators					
Small (1-99)	1,625	-9.5	-202.9	-15.3	+64.7
Medium (100-199)	7,785	-2.0	+61.2	-17.7	+106.0
Large (200+)	17,493	-1.9	+206.6	-16.7	+120.8

Source: Appendix IV-4.

Under this alternative, the small cattle category would experience the most severe income impact, showing a net loss of 202.9 percent ($3,297) in the long term. This would occur as a result of a 46-percent increase in allocation and the assumption that the operator would increase the herd to make use of this increase. (See Socioeconomics section, Alternative A.) The magnitude of this loss indicates that the existing base operation of the average small cattle rancher cannot tolerate such a large increase in herd size without a substantial increase in costs. The medium and large cattle categories are projected to show net increases of 61.2 percent ($4,768) and 206.6 percent ($36,140) respectively under the herd increase scenario in the long-term.

The sheep categories would show income losses from 1.1 percent to 9.3 percent in the initial phase, then increasing to 62.8 percent ($19,120) for the large category and 42.9 percent ($1,100) for the small in the long term.

After reductions of permit size and capital value in all ranch categories in the initial phase, all categories would receive very substantial increases in the long term. The smallest increase would occur in the small sheep category (+46.3 percent) and the largest would occur in the large cattle category (+120.8 percent).

Regional Impacts

Regional impacts due to changes in the livestock industry and big game hunting are presented below:

	Value and Percent Change From Existing Level					
	Total Gross Output[a]		Labor[b]		Income[a]	
Regional Impacts	Initial	Long Term	Initial	Long Term	Initial	Long Term
Livestock Grazing	-0.1 (-377.0)	+0.6 (+3,161.6)	-0.1 (-14.8)	+0.8 (+120.6)	-0.1 (-73.5)	+0.6 (+665.2)
Big Game Hunting	<0.1 (-6.1)	<0.1 (+227.3)	<0.1 (-0.4)	+0.1 (+13.2)	<0.1 (-2.6)	+0.1 (+86.7)

Source: FS and BLM.

[a]Value in thousands (1,000s) of dollars.

[b]Value in man years.

Initially, regional economic impacts resulting from grazing changes are slightly negative, and then become significantly positive in the long term. Impacts from changes in big game numbers are minimal and would occur mainly in the long term.

Attitudes or Expectations

Livestock operators would resist seasonal allocation concepts, and would view them as further governmental intervention of their traditional programs. In the short term, the reduction would generate a negative attitudinal and lifestyle impact, although this could be expected to be offset in the long term by AUM recovery and visual improvements to the range landscape. Thirty-one allotments would continue at existing levels, with moderate increases in the long term, and would not cause positive or negative impacts. Conservation groups would have a positive reaction to this management strategy that, in the long term, would accommodate increased wildlife and livestock AUMs in the planning area.

Unavoidable Adverse Impacts

Operators would resent governmental interference in their livestock operation.

Relationship Between Local Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Given that the alternative would improve the range resource, this relationship would be positive.

Irreversible and Irretrivable Commitment of Resources

None.

Conclusion

Initially, there would be a moderate negative impact on ranch income and capital value of the permit. In the long term, both income and capital value would be significantly increased. Overall regional economic impacts are projected to be significantly positive.

While this alternative would have short-term adverse lifestyle and attitudinal impacts to the livestock communities, long-term benefits to lifestyle and attitude would be generally satisfactory to both livestock and conservation groups.

TEAM ORGANIZATION

Name	Title	Assignment	Education	Experience
Don Pendleton	District Manager	Review and Approval	BS Wildlife	BLM - 22 years
J. Roderick Lister	Area Manager	Review and Approval	BS Entomology	BLM - 13 years
Larry Oldroyd	Project Manager	Organization and Support	BS Animal Husbandry	BIA - 11 years BLM - 17 years
Alan Partridge	Environmental Coordinator	Team Leader	BS Range Management	FS - 15 years BLM - 3 years
Roger Twitchell	Botanist	Technical Coordinator Vegetation and T & E Plants	BS - Botany	BLM - 3 years
Greg Thayn	Biologist	Technical Coordinator	BS Zoology MS Botany PhD Botany-Geology-Ecology	BYU[a] - 1 year BLM - 5 years
Bert Lowry	Wildlife Biologist	Animal Life and T & E Animals	BS - Zoology	BLM - 13 years U of U[b] - 2 years
Dee Ritchie	Range Conservationist	Vegetation and Livestock Grazing	BS - Wildlife and and Range Mgmt. Pathology Other - Public Land Administration MS - Range Mgmt.	ARS[c] - 1 year FS - 20 years BLM - 1 year
Margaret Matthies	Outdoor Recreation Planner	Recreation and Visual Resources	BS - Outdoor Rec. Ornamental Horticulture	Private - 1 year BLM - 5 years
Ben Hamm	Soil Scientist	Soil, Climate, Air Quality, Hydrology, Minerals	BS - Soil-Forestry MS - Natural and Environmental Resources	College Field Work - 2 years State - 1 year BLM - 1 year
David Hillier	Economist	Economic and Social Attitudes	BA - Economics	IBM - 3 years BLM - 3 years
Craig Harmon	Archaeologist	Archaeology and Cultural History	BA and MA - Anthropology	FS - 1 year BLM - 2 years
Ferris Clegg	Environmental Specialist	General Biologist	BS - Biological Science Composite MA - Biological Science	Teaching - 16 years Corps of Engineers - 2 summers BLM - 1 summer
Duane De Paepe	Environmental Specialist	Human Geography	BA - Geography MA - Geography	Higher education teaching - 5 years Environmental Consulting - 6 years
Mike Brown	Writer-Editor	Editorial	BA - History	Private - 5 years
Elaine Torgerson	Writer-Editor	Editorial	AD - Business	BLM - 2 years
Shirley Taft and Lee Mann	Clerical	Typing and proofing		

[a] Brigham Young University

[b] University of Utah

[c] Agricultural Research Service

REFERENCE MATERIAL

APPENDIX I-1

Existing Rangeland Management Allotments and Proposed Allotment Combinations

The Mountain Valley Planning Area is presently divided into 90 allotments for livestock grazing and management. It is proposed that some of these allotments be combined in order that BLM manage these lands in a more efficient and less costly manner. The two tables which follow show the present allotments (table A) and the proposed allotment combinations (table B), along with land status, acreage, and pertinent AUM information.

APPENDIX I-1
TABLE A
Existing Rangeland Management Allotments

Existing Allotments	Planning Unit	Land Status Acreages BLM	Land Status Acreages State & Private	BLM Acres Condition Good	BLM Acres Condition Fair	BLM Acres Condition Poor	BLM Acres Trend Improving	BLM Acres Trend Static	BLM Acres Trend Declining	AUMs Current Forage Production	AUMs Current Preference
Angle Bench	Piute	6,678	S 600	--	5,633	1,045	--	4,678	2,000	597	375 Cat.
Antelope Valley	Sanpete	12,803	S 3,217 P 3,523	8,501	4,302	--	--	12,803	--	2,355	2,538 Shp.
Apple Spring	Sanpete	1,640	S 1,320 P 880	1,389	251	--	--	1,640	--	213	190 Shp.
Aurora	N. Sevier	10,356	S 2,290 P 1,378	9,106	1,250	--	10,356	--	--	1,034	49 Cat. 640 Shp.
Axhandle	Sanpete	3,430	S 5,852 P 3,469	--	1,708	Waste 1,722	--	3,430	--	298	138 Cat. 277 Shp.
Axtell	Sanpete	1,222	S 535 P 603	233	--	989	--	--	1,222	69	88 Cat.
Bear Valley	N. Sevier	2,416	P 3,483	--	2,416	--	--	2,416	--	367	150 Cat.
Box Creek	Piute	1,411	--	--	1,411	--	--	1,411	--	217	109 Shp.
Burrville	N. Sevier	3,300	S 750 P 640	--	2,760	540	--	3,300	--	156	48 Cat.
Canal	N. Sevier	4,051	S 440	--	4,051	--	--	4,051	--	408	317 Cat. 57 Shp.
Cannon-Whitaker	Piute	780	--	--	280	500	--	780	--	194	Unallot.
Cedar Grove	Piute	23,480	S 1,340	290	23,000	190	--	23,480	--	2,200	324 Cat. 1,665 Shp.
Chicken Coop	N. Sevier	7,335	S 2,330 P 7,734	7,335	--	--	--	7,335	--	669	129 Cat. 260 Shp.
Deer Flat	Piute	705	P 15	Seeding 510	195	--	705	--	--	319	Unallot.
Denmark	N. Sevier	18,056	S 2,906 P 640	16,550	1,506	--	--	18,056	--	2,019	2,898 Shp.
Dry Hill	Sanpete	841	S 20	841	--	--	--	841	--	43	Unallot.
Dry Lake	Piute	7,520	S 1,776	Seeding 257	7,263	--	--	6,520	1,000	548	238 Cat.
Dry Wash	Piute	1,829	S 1,557	--	915	914	--	1,669	160	271	216 Cat.
Durkee	Piute	3,895	S 723	--	3,895	--	--	3,895	--	589	134 Shp.
East Bench	Piute	15,558	P 180	--	15,558	--	--	12,638	2,920	1,074	772 Cat.
East Fork	Piute	3,242	--	--	3,242	--	--	3,242	--	206	120 Cat.
East Piute	Piute	5,906	S 933	--	5,906	--	--	3,751	2,155	459	166 Cat. 52 Shp.
Elbow	Piute	7,383	S 1,450 P 870	3,045	4,338	--	--	7,383	--	524	214 Shp.
Fayette Cattle	Sanpete	9,580	S 4,840 P 120	5,045 Seeding 3,980	555	--	--	9,580	--	1,561	1,615 Cat. 472 Shp.
Fishlake	N. Sevier	22,263	S 1,760 P 1,440	Seeding 1,440	18,183	2,640	--	22,263	--	1,060	737 Shp.
Flat Canyon	N. Sevier	2,339	--	1,455	884	--	--	--	2,339	118	92 Shp.
Flat Canyon	Sanpete	2,983	S 927 P 1,350	2,367	616	--	--	2,983	--	192	350 Cat.

APPENDIX I-1, TABLE A (continued)

AUMs Current Licensed Use	Current Season of Use		Current Wildlife Use (AUMs)		Projected Wildlife Needs (AUMs)		Period of Use		
	Cattle	Sheep	Antelope & Deer	Elk	Antelope & Deer	Elk	Antelope & Deer	Elk	Allotments
375 Cat.	12/1-12/31 3/1-5/31	--	207 dr.	15	293 dr.	15	11/19-4/15 dr.	12/1-4/15	Angle Bench
1,762 Shp.	--	10/6-4/30	308 dr.	--	308 dr.	63	12/1-4/30 dr.	--	Antelope Valley
85 Shp.	--	11/1-11/27 5/1-5/31	114 dr.	15	136 dr.	24	12/1-4/30 dr.	Same	Apple Spring
49 Cat. 540 Shp.	5/15-6/15	3/16-5/25	345 dr.	--	522 dr.	--	11/15-4/15 dr.	--	Aurora
118 Cat. 44 Shp.	5/1-10/15	5/1-6/30	206 dr.	28	206 dr.	28	12/1-4/30 dr.	12/1-4/30	Axhandle
88 Cat.	3/16-5/15 11/1-12/15	--	114 dr.	--	140 dr	--	12/1-4/30 dr.	--	Axtell
147 Cat.	5/16-10/15	--	207 dr.	10	207 dr.	10	11/15-4/15 dr.	12/1-4/15	Bear Valley
89 Shp.	--	4/1-5/31 12/1-1/31	103 dr.	5	133 dr.	5	11/15-4/15 dr.	12/1-4/15	Box Creek
41 Cat.	6/1-7/30	--	103 dr.	5	166 dr.	5	11/15-4/15 dr.	12/1-4/15	Burrville
323 Cat. 44 Shp.	12/1-4/30	10/15-12/10 4/1-4/30	34 dr.	--	34 dr.	--	11/15-4/15 dr.	--	Canal
Unallot.	--	--	172 dr.	--	172 dr.	--	11/15-4/15 dr.	--	Cannon-Whitaker
110 Cat. 1,063 Shp.	5/10-6/30	10/6-1/15 5/26-6/30	60 dr. 37 ant.	114	140 dr. 80 ant.	243	4/16-11/14 dr. 4/15-11/14 ant.	1/1-3/15	Cedar Grove
17 Cat. 249 Shp.	4/1-5/31	5/13-5/12 10/20-10/31	216 dr. 2 ant.	62	384 dr. 2 ant.	62	11/15-4/15 dr. Yearlong ant.	11/15-4/15	Chicken Coop
Unallot.	--	--	207 dr.	10	207 dr.	10	11/15-4/15 dr.	Same	Deer Flat
2,306 Shp.	--	10/16-6/6	172 dr.	--	480 dr.	--	11/15-4/15 dr.	--	Denmark
Unallot.	--	--	49 dr.	--	49 dr.	--	12/1-4/30 dr.	--	Dry Hill
81 Cat.	5/21-6/30	--	310 dr.	--	747 dr.	--	11/15-4/15 dr.	--	Dry Lake
177 Cat.	4/21-6/20	--	22 dr. 6 ant.	34	36 dr. 6 ant.	34	11/15-4/15 dr. Yearlong ant.	11/15-4/15	Dry Wash
63 Shp.	--	1/25-2/20	455 dr.	--	455 dr.	--	11/15-4/15 dr.	--	Durkee
737 Cat.	10/15-12/31 4/16-5/31	--	182 dr. 19 ant.	161	226 dr. 19 ant.	161	11/15-4/15 dr. Yearlong ant.	11/15-4/15	East Bench
109 Cat.	5/1-7/31	--	86 dr.	--	86 dr.	--	11/15-4/15 dr.		East Fork
215 Cat.	4/10-6/10	11/1-2/15	241 dr.	--	446 dr.	--	11/15-4/15 dr.	--	East Piute
141 Shp.	--	12/11-1/20	310 dr.	--	549 dr.	--	11/15-4/15 dr.	--	Elbow
1,149 Cat. 268 Shp.	5/1-9/30	10/1-11/7 6/1-6/30	537 dr.	--	537 dr.	67	12/1-4/30 dr.	--	Fayette Cattle
643 Shp.	--	10/10-11/25 6/1-7/15	232 dr. 29 ant.	65	753 dr. 65 ant.	138	Yearlong dr. 4/16-11/14 ant.	1/1-2/15	Fishlake
93 Shp.	--	4/6-5/20	26 dr.	--	145 dr.	--	11/15-4/15 dr.	--	Flat Canyon
350 Cat.	5/1-6/30 10/1-12/31	--	145 dr.	--	145 dr.	18	12/1-4/30 dr.	--	Flat Canyon

(continued)

APPENOIX I-1, TABLE A (continued)

Existing Allotments	Planning Unit	Land Status Acreages		BLM Acres						AUMs Current Forage Production	AUMs Current Preference
		BLM	State & Private	Condition			Trend				
				Good	Fair	Poor	Improving	Static	Declining		
Greenwich Creek	Piute	580	P 80	--	--	580	--	580	--	85	13 Cat. 20 Shp.
Gunnison Valley	Sanpete	14,385	S 5,395 P 3,750	6,696	2,584	5,105	--	10,545	3,840	2,309	2,134 Shp.
Gypsum	N. Sevier	19,766	S 2,814 P 6,610	13,259	6,507	--	--	19,766	--	1,588	216 Cat. 1,015 Shp.
Hatch Canyon	Piute	1,140	--	--	--	1,140	--	660	480	119	46 Shp.
Hayes Canyon	Sanpete	7,013	S 1,088 P 120	5,648 Seeding 915	450	--	--	7,013	--	681	551 Shp.
Hodge Ranch	Piute	13,584	S 2,591 P 764	--	10,812	2,772	--	11,344	2,240	760	484 Shp.
Hop Creek	Sanpete	521	S 719 P 995	--	521	--	--	521	--	186	240 Shp.
Horse Ridge	Sanpete	1,668	S 812 P 1,115	646	855	Waste 167	--	1,668	--	130	105 Shp.
Hunt	N. Sevier	910	S 40	--	678	232	--	910	--	73	52 Shp.
Hunter Spring	Piute	2,873	S 634	--	2,553	320	--	2,873	--	383	167 Cat.
Indian Hollow	Sanpete	1,040	P 680	--	1,040	--	--	1,040	--	380	108 Shp.
Jones	N. Sevier	330	--	330	--	--	--	330	--	26	12 Shp.
Joseph	N. Sevier	3,880	S 1,280	630	3,220	Waste 30	--	3,880	--	204	170 Cat.
Junction	Piute	9,129	S 3,346 P 505	1,112 Seeding 728	7,289	--	--	8,449	680	764	204 Cat.
Kingston Canyon	Piute	2,323	--	--	1,163	1,160	--	1,723	600	260	72 Cat. 84 Shp.
Koosharem Creek	N. Sevier	1,918	P 160	--	--	1,918	--	1,918	--	268	46 Shp.
Little Valley	Sanpete	7,094	S 1,910 P 680	6,869 Seeding 225	--	--	--	5,814	1,280	742	590 Cat.
Lone Cedar	Sanpete	13,282	S 1,749 P 3,183	9,763	3,519	--	--	13,282	--	1,278	1,310 Shp.
Long Flat	Sanpete	6,037	S 1,553 P 1,557	5,967	--	70	--	6,037	--	1,031	1,149 Shp.
Lost Creek	N. Sevier	2,164	S 1,162 P 588	--	2,164	--	--	2,164	--	212	66 Cat.
Magleby	N. Sevier	914	--	--	914	--	--	914	--	38	34 Shp.
Manning Creek	Piute	7,241	S 899 P 3,609	--	7,241	--	--	6,561	680	522	138 Cat.
Maple Canyon	Sanpete	1,610	S 152	--	1,610	--	--	1,610	--	191	135 Shp.
Marysvale	Piute	1,999	--	1,338 Seeding 286	375	--	1,999	--	--	185	52 Cat.
Mayfield Cattle	Sanpete	1,564	S 270 P 88	1,564	--	--	--	--	1,564	92	211 Cat.
Middle Hollow	Sanpete	764	S 190 P 5	256 Seeding 508	--	--	--	--	764	133	82 Cat.
Monroe Coop	N. Sevier	24,202	S 2,003 P 2,714	7,782 Seeding 2,827	13,593	--	--	24,202	--	1,477	1,017 Shp.

APPENDIX I-1, TABLE A (continued)

AUMs Current Licensed Use	Current Season of Use		Current Wildlife Use (AUMs)		Projected Wildlife Needs (AUMs)		Period of Use		
	Cattle	Sheep	Antelope & Deer	Elk	Antelope & Deer	Elk	Antelope & Deer	Elk	Allotments
13 Cat. 11 Shp.	5/10-5/31	3/16-4/15	52 dr.	--	52 dr.	--	11/15-4/15 dr.	--	Greenwich Creek
634 Shp.	--	10/1-10/15 5/1-6/15	458 dr.	275	699 dr.	275	13/1-4/30 dr.	12/1-4/30	Gunnison Valley
881 Shp.	4/16-6/20	11/1-5/31	517 dr. 10 ant.	130	1,503 dr. 10 ant.	130	11/15-4/15 dr. Yearlong ant.	11/15-4/15	Gypsum
37 Shp.	--	1/16-1/25	65 dr.	18	65 dr.	18	11/15-4/15 dr.	11/15-4/15	Hatch Canyon
449 Shp.	--	3/8-3/31 5/7-5/31	190 dr.	--	367 dr.	--	12/14/30 dr.	--	Hayes Canyon
196 Shp.	--	9/16-10/15 5/16-6/30	276 dr.	--	722 dr.	--	11/15-4/15 dr.	--	Hodge Ranch
151 Shp.	--	10/1-11/30 5/1-6/30	30 dr.	21	35 dr.	39	12/1-4/30 dr.	12/1-4/30	Hop Creek
105 Shp.	--	6/1-6/30	126 dr.	--	126 dr.	--	12/1-4/30 dr.	--	Horse Ridge
35 Shp.	--	10/1-11/30 3/1-4/30	21 dr.	--	78 dr.	--	11/15-4/15 dr.	--	Hunt
68 Cat.	10/1-11/15	--	216 dr.	--	216 dr.	--	11/15-4/15 dr.	--	Hunter Spring
42 Shp.	--	5/1-6/15 10/1-11/15	76 dr.	16	92 dr.	29	12/1-4/30 dr.	12/1-4/30	Indian Hollow
10 Shp.	--	5/1-5/15	14 dr.	--	32 dr.	--	11/15-4/15 dr.	--	Jones
153 Cat.	4/10-5/31	--	34 dr.	--	341 dr.	--	11/15-4/15 dr.	--	Joseph
350 Cat.	11/1-1/15 5/1-5/30	--	414 dr.	--	468 dr.	--	11/15-4/15 dr.	--	Junction
72 Cat. 23 Shp.	11/16-1/15	10/1-10/10 6/1-6/10	104 dr.	--	104 dr.	--	11/15-4/15 dr.	--	Kingston Canyon
40 Shp.	--	1/16-1/31	207 dr.	15	207 dr.	15	11/15-4/15 dr.	12/1-4/15	Koosharem Creek
476 Cat.	5/1-8/31	--	184 dr.	--	356 dr.	--	12/1-4/30 dr.	--	Little Valley
798 Shp.	--	12/1-4/30 6/1-6/30	363 dr.	--	701 dr.	--	12/1-4/30 dr.	--	Lone Cedar
987 Shp.	--	10/16-5/31	229 dr.	--	229 dr.	32	12/1-4/30 dr.	--	Long Flat
66 Cat.	5/1-5/31	--	129 dr. 3 ant.	14	202 dr. 3 ant.	14	11/15-4/15 dr. Yearlong ant.	11/15-4/15	Lost Creek
34 Shp.	--	12/1-12/25	4 dr.	--	73 dr.	--	11/15-4/15 dr.	--	Magleby
60 Shp.	10/1-3/31	--	379 dr.	5	379 dr.	5	11/15-4/15 dr.	12/1-4/15	Manning Creek
119 Shp.	--	10/6-5/31	77 dr.	--	77 dr.	11	12/1-4/30 dr.	--	Maple Canyon
17 Cat.	5/10-7/15	--	103 dr.	5	184 dr.	5	11/15-4/15 dr.	12/1-4/15	Marysvale
210 Cat.	12/1-2/15 4/1-5/31	--	35 dr.	--	40 dr.	--	11/15-4/15 dr.	--	Mayfield Cattle
82 Cat.	5/21-7/10	--	114 dr.	24	114 dr.	24	12/1-4/30 dr.	12/1-4/30	Middle Hollow
799 Shp.	--	9/6-3/31 6/1-6/20	455 dr.	5	1,702 dr.	5	11/15-4/15 dr.	12/1-4/15	Monroe Coop

(continued)

APPENDIX I-1, TABLE A (continued)

Existing Allotments	Planning Unit	Land Status Acreages: BLM	Land Status Acreages: State & Private	BLM Acres: Condition: Good	Condition: Fair	Condition: Poor	Trend: Improving	Trend: Static	Trend: Declining	AUMs Current Forage Production	AUMs Current Preference
N. Cove Mountain	N. Sevier	12,989	S 2,424 P 2,937	1,116	11,873	--	4,636	8,353	--	1,324	540 Cat. 296 Shp.
North Hollow	Sanpete	1,318	P 362	323 Seeding 995	--	--	--	--	1,318	203	72 Cat.
North Narrows	Piute	13,713	S 2,000 P 2,911	-- --	12,342	1,371	--	13,713	--	957	448 Cat. 254 Shp.
Oak Spring	Piute	6,375	--	--	5,055	1,320	--	6,375	--	563	319 Shp.
Ogden	Piute	9,450	S 480 P 3,243	1,335	8,115	--	--	9,450	--	438	350 Cat.
P-Hill	Piute	2,200	--	60	2,140	--	--	2,200	--	406	Unallot.
Parson Mills	N. Sevier	881	S 40 P 40	--	881	--	--	--	881	35	21 Shp.
Pearson-Lewis	Piute	1,973	P 36	60	1,913	--	--	1,973	--	265	127 Cat.
Piute Dam	Piute	2,364	P 580	--	1,161	1,203	--	1,325	1,039	157	123 Shp.
Plateau	N. Sevier	5,035	S 1,930 P 1,318	5,035	--	--	--	5,035	--	553	390 Shp.
Poulson	N. Sevier	600	P 40	--	600	--	--	600	--	38	29 Cat.
Red Canyon	Sanpete	8,110	S 3,342 P 465	5,928	2,182	--	--	6,910	1,200	1,080	702 Cat.
Ricks Pasture	Piute	721	--	--	721	--	--	721	--	20	11 Cat.
River	Sanpete	488	S 1,258 P 560	--	488	--	--	--	488	52	56 Cat.
Rock Canyon	Sanpete	8,794	S 275 P 2,445	500 Seeding 770	7,524	--	--	8,314	480	765	1,200 Cat.
Rocky Ford	Piute	11,447	S 1,280 P 640	--	8,687	2,760	--	8,927	2,520	774	386 Cat.
Rough Canyon	Sanpete	4,282	S 1,397 P 142	3,134	1,043	105	--	4,282	--	479	591 Shp.
Sall's Meadow	N. Sevier	6,100	S 640 P 160	Seeding 900	2,283	2,917	--	--	6,100	422	176 Shp.
Sand Ledges	N. Sevier	6,196	S 670 P 20	--	6,196	--	--	6,196	--	742	451 Cat.
Sanpitch North	Sanpete	599	--	--	599	--	--	599	--	96	240 Shp.
Sanpitch South	Sanpete	360	P 80	--	360	--	--	--	360	33	85 Shp.
South Hollow	Sanpete	2,096	S 80	478 Seeding 1,075	543	--	--	--	2,096	313	292 Cat.
South Narrows	Piute	12,755	S 1,600 P 478	--	12,755	--	--	10,235	2,520	950	281 Cat. 425 Shp.
South Valley	Sanpete	12,267	S 632 P 1,147	6,607	5,660	--	--	12,267	--	1,534	2,777 Shp.
Swedes Canyon	Sanpete	2,823	S 171	2,823	--	--	--	2,823	--	505	396 Shp.
Tate	Piute	1,672	--	1,094	578	--	--	1,672	--	74	20 Cat.
Ten Mile	Piute	3,919	S 480 P 1,434	Seeding 273	3,646	--	--	2,999	920	356	149 Shp.
Timber Canyon	Sanpete	15,260	S 20,482 P 6,125	12,850 Seeding 507	1,903	--	--	15,260	--	1,449	588 Shp.

APPENDIX I-1, TABLE A (continued)

AUMs Current Licensed Use	Current Season of Use: Cattle	Current Season of Use: Sheep	Current Wildlife Use (AUMs): Antelope & Deer	Current Wildlife Use (AUMs): Elk	Projected Wildlife Needs (AUMs): Antelope & Deer	Projected Wildlife Needs (AUMs): Elk	Period of Use: Antelope & Deer	Period of Use: Elk	Allotments
418 Cat.	5/1-6/30 10/1-10/25	Same	448 dr.	40	1,283 dr.	40	11/15-4/15 dr.	12/1-4/15	N. Cove Mountain
72 Cat.	5/10-7/10	--	208 dr.	30	208 dr.	30	12/1-4/30 dr.	12/1-4/30	North Hollow
448 Cat. 213 Shp.	12/1-5/31	2/6-3/31	138 dr. 7 ant.	110	622 dr. 7 ant.	110	11/15-4/15 dr. Yearlong ant.	11/15-4/15	North Narrows
7 Shp.	--	10/1-10/31 6/1-6/30	202 dr.	42	202 dr.	42	11/15-4/15 dr.	11/15-4/15	Oak Spring
102 Cat.	5/1-7/15	--	103 dr.	10	752 dr.	10	11/15-4/15 dr.	12/1-4/15	Ogden
Unallot.	--	--	276 dr.	20	276 dr.	20	11/15-4/15 dr.	12/1-4/15	P-Hill
21 Shp.	--	2/11-2/25	14 dr.	--	21 dr.	--	11/15-4/15 dr.	--	Parson Mills
56 Cat.	6/1-10/5	--	138 dr.	--	138 dr.	--	11/15-4/15 dr.	--	Pearson-Lewis
72 Shp.	--	12/1-3/15	34 dr.	--	42 dr.	--	11/15-4/15 dr.	--	Piute Dam
367 Shp.	--	11/1-11/30 6/1-7/10	138 dr.	25	336 dr.	25	11/15-4/15 dr.	12/1-4/15	Plateau
29 Cat.	4/21-5/20	--	9 dr.	--	50 dr.	--	11/15-4/15 dr.	--	Poulson
565 Cat.	5/1-8/31	--	222 dr.	--	430 dr.	--	12/1-4/30 dr.	--	Red Canyon
11 Cat.	5/1-9/30	--	9 dr.	--	51 dr.	--	11/15-4/15 dr.	--	Ricks Pasture
40 Cat.	4/1-10/15	--	14 dr.	--	14 dr.	--	11/15-4/15 dr.	--	River
262 Cat.	3/1-10/31	--	212 dr.	--	411 dr.	--	12/1-4/30 dr.	--	Rock Canyon
285 Cat.	3/1-5/31	--	388 dr.	--	388 dr.	--	11/15-4/15 dr.	--	Rocky Ford
555 Shp.	--	1/1-3/10	239 dr.	--	239 dr.	26	12/1-4/30 dr.	--	Rough Canyon
91 Shp.	--	4/15-6/25	241 dr.	5	446 dr.	5	11/15-4/15 dr.	12/1-4/15	Sall's Meadow
305 Cat.	5/1-6/30	--	216 dr.	75	575 dr.	131	11/15-4/15 dr.	11/15-4/15	Sand Ledges
184 Shp.	--	11/16-2/28 5/11-6/30	16 dr.	--	18 dr.	--	11/15-4/15 dr.	--	Sanpitch North
65 Shp.	--	11/16-2/28 5/11-6/30	5 dr.	--	6 dr.	--	11/15-4/15 dr.	--	Sanpitch South
266 Cat.	5/1-6/25	--	305 dr.	51	305 dr.	51	12/1-4/30 dr.	12/1-4/30	South Hollow
278 Cat. 301 Shp.	12/1-3/10 5/16-6/30	1/16-3/31	138 dr. 7 ant.	99	505 dr. 7 ant.	99	11/15-4/15 Yearlong ant.	11/15-4/15	South Narrows
2,045 Shp.	--	12/1-4/30	298 dr.	--	298 dr.	--	12/1-4/30 dr.	--	South Valley
334 Shp.	--	10/16-3/31	77 dr	--	149 dr.	--	12/1-4/30 dr.	--	Swedes Canyon
7 Cat.	5/10-7/15	--	34 dr.	--	118 dr.	--	11/15-4/15 dr.	--	Tate
63 Shp.	--	11/1-11/25	207 dr.	--	286 dr.	--	11/15-4/15 dr.	--	Ten Mile
588 Shp.	--	9/1-9/30 4/1-6/30	623 dr.	127	623 dr.	127	12/1-4/30 dr.	12/1-4/30	Timber Canyon

(continued)

APPENDIX I-1, TABLE A (continued)

Existing Allotments	Planning Unit	Land Status Acreages		BLM Acres						AUMs Current Forage Production	AUMs Current Preference
				Condition			Trend				
		BLM	State & Private	Good	Fair	Poor	Improving	Static	Declining		
Twelve Mile	Sanpete	160	--	--	160	--	--	--	160	9	99 Cat.
Twist	N. Sevier	5,307	--	2,630	2,677	--	--	5,307	--	261	209 Cat.
Uinta	Sanpete	566	S 120 P 594	566	--	--	--	566	--	264	109 Shp.
Under-the-Rim	Sanpete	1,282	S 1,296 P 1,343	1,140	142	--	--	1,282	--	104	286 Shp.
Washburn	N. Sevier	595	S 66 P 21	--	105	490	--	595	--	35	Unallot.
West Side	Sanpete	3,506	S 640	3,506	--	--	--	3,506	--	501	839 Shp.
Wilson Dump	N. Sevier	1,121	S 40	--	1,121	--	--	1,121	--	54	45 Shp.
Wood Hollow	Sanpete	3,715	S 1,198 P 1,840	3,590	125	--	--	3,715	--	147	213 Shp.
GRAND TOTAL		499,972	S106,714 P 82,489	186,988 Seeding (16196)	280,784	32,200	17,696	438,270	44,006	47,835	12,495 Cat. 27,199 Shp.

APPENDIX I-1, TABLE A (concluded)

AUMs Current Licensed Use	Current Season of Use		Current Wildlife Use (AUMs)		Projected Wildlife Needs (AUMs)		Period of Use		Allotments
	Cattle	Sheep	Antelope & Deer	Elk	Antelope & Deer	Elk	Antelope & Deer	Elk	
93 Cat.	4/15-6/15	--	11 dr.	--	17 dr.	--	12/1-4/30 dr.	--	Twelve Mile
209 Cat.	4/20-6/10	--	52 dr.	--	124 dr.	--	11/15-4/15 dr.	--	Twist
109 Shp.	--	5/1-6/30	13 dr.	7	15 dr.	15	12/1-4/30 dr.	12/1-4/30	Uinta
164 Shp.	--	10/1-6/30	29 dr.	--	29 dr.	--	12/1-4/30 dr.	--	Under-the-Rim
Unallot.	--	--	21 dr.	--	21 dr.	--	11/15-4/15	--	Washburn
730 Shp.	--	11/1-4/15	84 dr.	--	163 dr.	--	12/14/30	--	West Side
20 Shp.	--	5/11-5/25	9 dr.	--	104 dr.	--	11/15-4/15	--	Wilson Dump
213 Shp.	--	4/16-6/30	254 dr.	33	288 dr.	61	12/1-4/30	12/1-4/30	Wood Hollow
9,039 Cat. 18,943 Shp.	--	--	15,460 dr. 120 ant.	1,726	26,419 dr. 199 ant.	2,277	--	--	GRAND TOTAL

(continued)

TABLE B
Proposed Allotment Combinations

Proposed Allotment Combinations	Planning Unit	Land Status Acreages: BLM	Land Status Acreages: State & Private	BLM Acres: Condition: Good	BLM Acres: Condition: Fair	BLM Acres: Condition: Poor	BLM Acres: Trend: Improving	BLM Acres: Trend: Static	BLM Acres: Trend: Declining	AUMs Current Forage Production	AUMs Current Preference
New Antelope		(18,840)	S (4,770) P (5,080)	(14,468)	(4,302)	(70)	--	(18,840)	--	(3,386)	(3,687 Shp.)
Antelope Valley	Sanpete	12,803	S 3,217 P 3,523	8,501	4,302	--	--	12,803	--	2,355	2,538 Shp.
Long Flat	Sanpete	6,037	S 1,553 P 1,557	5,967	--	70	--	6,037	--	1,031	1,149 Shp.
New Ory Lake	Piute	(14,761)	S (2,675) P (3,609)	(257)	(14,504)	--	--	(13,081)	(1,680)	(1,070)	(376 Cat.)
Ory Lake	Piute	7,520	S 1,776	Seeding 257	7,263	--	--	6,520	1,000	548	238 Cat.
Manning Creek	Piute	7,241	S 899 P 3,609	--	7,241	--	--	6,561	680	522	138 Cat.
New East Fork	Piute	(4,022)	--	--	(3,522)	(500)	--	(4,022)	--	(400)	(120 Cat.)
Cannon-Whitaker	Piute	780	--	--	280	500	--	780	--	194	Unallot.
East Fork	Piute	3,242	--	--	3,242	--	--	3,242	--	206	120 Cat.
New Elbow	Piute	(15,197)	S (2,653) P (2,304)	(3,318)	(11,879)	--	--	(14,277)	(920)	(1,413)	(497 Shp.)
Ourkee	Piute	3,895	S 723	--	3,895	--	--	3,895	--	589	134 Shp.
Elbow	Piute	7,383	S 1,450 P 870	3,045	4,338	--	--	7,383	--	524	214 Shp.
Ten Mile	Piute	3,919	S 480 P 1,434	Seeding 273	3,646	--	--	2,999	920	300	149 Shp.
New Elsinore	N. Sevier	(3,253)	--	(1,455)	(1,798)	--	--	(914)	(2,339)	(156)	(126 Shp.)
Flat Canyon	N. Sevier	2,339	--	1,455	884	--	--	--	2,339	118	92 Shp.
Magleby	N. Sevier	914	--	--	914	--	--	914	--	38	34 Shp.
New Fishlake	N. Sevier	(28,638)	S (1,760) P (1,440)	(1,440)	(23,238)	(3,960)	--	(28,638)	--	(1,623)	(1,056 Shp.)
Fishlake	N. Sevier	22,263	S 1,760 P 1,440	Seeding 1,440	18,183	2,640	--	22,263	--	1,060	737 Shp.
Oak Spring	Piute	6,375	--	--	5,055	1,320	--	6,375	--	563	319 Shp.
New Gunnison	Sanpete	(17,691)	S (6,200) P (4,521)	(8,493)	(3,104)	(6,094)	--	(10,545)	(7,146)	(2,512)	(398 Cat.) (2,219 Shp.)
Axtell	Sanpete	1,222	S 535 P 603	233	--	989	--	--	1,222	69	88 Cat.
Gunnison Valley	Sanpete	14,385	S 5,395 P 3,750	6,696	2,584	5,105	--	10,545	3,840	2,309	2,134 Shp.
Mayfield Cattle	Sanpete	1,564	S 270 P 88	1,564	--	--	--	--	1,564	92	211 Cat.
Sanpitch South	Sanpete	360	P 80	--	360	--	--	--	360	33	85 Shp.
Twelve Mile	Sanpete	160	--	--	160	--	--	--	160	9	99 Cat.
New Lone Cedar	Sanpete	(19,611)	S (2,560) P (3,183)	(16,092)	(3,519)	--	--	(19,611)	--	(2,284)	(2,545 Shp.)
Lone Cedar	Sanpete	13,282	S 1,749 P 3,183	9,763	3,519	--	--	13,282	--	1,278	1,310 Shp.
Swedes Canyon	Sanpete	2,823	S 171	2,823	--	--	--	2,823	--	505	396 Shp.
West Side	Sanpete	3,506	S 640	3,506	--	--	--	3,506	--	501	839 Shp.
New Marysvale	Piute	(4,376)	P (15)	(3,228)	(1,148)	--	(2,704)	(1,672)	--	(578)	(72 Cat.)
Deer Flat	Piute	705	P 15	Seeding 510	195	--	705	--	--	319	Unallot.
Marysvale	Piute	1,999	--	1,338 Seeding 286	375	--	1,999	--	--	185	52 Cat.
Tate	Piute	1,672	--	1,094	578	--	--	1,672	--	74	20 Cat.
New Monroe Coop	N. Sevier	(25,083)	S (2,043) P (2,754)	(10,609)	(14,474)	--	--	(24,202)	(881)	(1,512)	(1,038 Shp.)
Monroe Coop	N. Sevier	24,202	S 2,003 P 2,714	7,782 Seeding 2,827	13,593	--	--	24,202	--	1,477	1,017 Shp.
Parson Mills	N. Sevier	881	S 40 P 40	--	881	--	--	--	881	35	21 Shp.

APPENDIX I-1, TABLE B (continued)

AUMs Current Licensed Use	Proposed and Current Season of Use: Cattle	Sheep	Current Wildlife Use (AUMs): Antelope & Deer	Elk	Projected Wildlife Needs (AUMs): Antelope & Deer	Elk	Allotments
(2,749 Shp.)	--	(10/16-5/31)	(537 dr.)	--	(537 dr)	(95)	New Antelope
1,762 Shp.	--	10/6-4/30	308 dr.	--	308 dr.	63	
987 Shp.	--	10/16-5/31	229 dr.	--	229 dr.	32	
(81 Cat.) (60 Shp.)	(10/1-2/28) (5/21-6/30)	--	(689 dr.)	(5)	(1,126 dr.)	(5)	New Dry Lake
81 Cat.	5/21-6/30	7/15-9/30	310 dr.	--	747 dr.	--	
60 Shp.	--	10/1-3/31	379 dr.	5	379 dr.	5	
(109 Cat.) Unallot.	(10/1-11/30) --	-- --	(258 dr.) 172 dr.	-- --	(258 dr.) 172 dr.	-- --	New East Fork
109 Cat.	5/1-7/31	--	86 dr.	--	86 dr.	--	
(267 Shp.)	--	(11/1-2/25)	(972 dr.)	--	(1,290 dr.)	--	New Elbow
63 Shp.	--	1/25-2/20	455 dr.	--	455 dr.	--	
141 Shp.	--	12/11-1/20	310 dr.	--	549 dr.	--	
63 Shp.	--	11/1-11/25	207 dr.	--	286 dr.	--	
(127 Shp.)	--	(2/1-3/31)	(30 dr.)	--	(218 dr.)	--	New Elsinore
93 Shp.	--	4/6-5/20	26 dr.	--	145 dr.	--	
34 Shp.	--	12/21-12/25	4 dr.	--	73 dr.	--	
(650 Shp.)	--	(10/10-11/30) (6/1-6/30)	(434 dr.) (29 ant.)	(107)	(955 dr.) (65 ant.)	(180)	New Fishlake
643 Shp.	--	10/10-11/25 6/1-7/15	232 dr. 29 ant.	65	753 dr. 65 ant.	138	
7 Shp.	--	10/1-10/31 6/1-6/30	202 dr.	42	202 dr.	42	
(391 Cat.) (699 Shp.)	(4/16-6/15) (10/1-10/31)	(4/16-6/15) (10/1-10/31)	(623 dr.)	(275)	(902 dr.)	(275)	New Gunnison
88 Cat.	3/16-5/15 11/1-12/15	--	114 dr.	--	140 dr.	--	
634 Shp.	--	10/1-10/15 5/1-6/15	458 dr.	275	699 dr.	275	
210 Cat.	12/1-2/15 4/1-5/31	--	35 dr.	--	40 dr.	--	
65 Shp.	--	11/16-2/28 5/11-6/30	5 dr.	--	6 dr.	--	
93 Cat.	4/15-6/15	--	11 dr.	--	17 dr.	--	
(1,862 Shp.)	--	(12/1-6/30)	(524 dr.)	--	(1,013 dr.)	--	New Lone Cedar
798 Shp.	--	12/1-4/30 6/1-6/30	363 dr.	--	701 dr.	--	
334 Shp.	--	10/16-3/31	77 dr.	--	149 dr.	--	
730 Shp.	--	11/1-4/15	84 dr.	--	163 dr.	--	
(24 Cat.) Unallot.	(5/1-7/15) --	-- --	(344 dr.) 207 dr.	(15) 10	(509 dr.) 207 dr.	(15) 10	New Marysvale
17 Cat.	5/10-7/15	--	103 dr.	5	184 dr.	5	
7 Cat.	5/10-7/15	--	34 dr.	--	118 dr.	--	
(820 Shp.)	--	(9/1-3/31) (6/1-6/30)	(469 dr.)	(5)	(1,723 dr.)	(5)	New Monroe Coop
799 Shp.	--	9/6-3/31 6/1-6/20	455 dr.	5	1,702 dr.	5	
21 Shp.	--	2/11-2/25	14 dr.	--	21 dr.	--	

(continued)

APPENDIX I-1, TABLE 8 (continued)

Proposed Allotment Combinations	Planning Unit	Land Status Acreages: BLM	Land Status Acreages: State & Private	BLM Acres: Condition: Good	BLM Acres: Condition: Fair	BLM Acres: Condition: Poor	BLM Acres: Trend: Improving	BLM Acres: Trend: Static	BLM Acres: Trend: Declining	AUMs Current Forage Production	AUMs Current Preference
New Narrows	--	(34,817)	S (4,350) P (4,269)	--	(29,268)	(5,549)	--	(31,817)	(3,000)	(2,752)	(790 Cat.) (900 Shp.)
Box Creek	Piute	1,411	--	--	1,411	--	--	1,411	--	217	109 Shp.
Burrville	N. Sevier	3,300	S 750 P 640	--	2,760	540	--	3,300	--	156	48 Cat.
Greenwich Creek	Piute	580	P 80	--	--	580	--	580	--	85	13 Cat. 20 Shp.
Hatch Canyon	Piute	1,140	--	--	--	1,140	--	660	480	119	46 Shp.
Koosharem Creek	N. Sevier	1,918	P 160	--	--	1,918	--	1,918	--	268	46 Shp.
North Narrows	Piute	13,713	S 2,000 P 2,911	-- --	12,342	1,371	--	13,713	--	957	448 Cat. 254 Shp.
South Narrows	Piute	12,755	S 1,600 P 478	--	12,755	--	--	10,235	2,520	950	281 Cat. 425 Shp.
New North Cove	N. Sevier	(19,684)	S (3,130) P (3,118)	(2,016)	(14,261)	(3,407)	(4,636)	(8,948)	(6,100)	(1,781)	(540 Cat.) (472 Shp.)
N. Cove Mountain	N. Sevier	12,989	S 2,424 P 2,937	1,116	11,873	--	4,636	8,353	--	1,324	540 Cat. 296 Shp.
Sall's Meadow	N. Sevier	6,100	S 640 P 160	Seeding 900	2,283	2,917	--	--	6,100	422	176 Shp.
Washburn	N. Sevier	595	S 66 P 21	--	105	490	--	595	--	35	Unallot.
New Otter Creek	--	(37,649)	S (4,748) P (944)	--	(32,918)	(4,731)	--	(30,329)	(7,320)	(2,702)	(1,363 Cat.) (484 Shp.)
Angle Bench	Piute	6,678	S 600	--	5,633	1,045	--	4,678	2,000	597	375 Cat.
Dry Wash	Piute	1,829	S 1,557	--	915	914	--	1,669	160	271	216 Cat.
East Bench	Piute	15,558	P 180	--	15,558	--	--	12,638	2,920	1,074	772 Cat.
Hodge Ranch	Piute	13,584	S 2,591 P 764	--	10,812	2,772	--	11,344	2,240	760	484 Shp.
New Pearson-Lewis	--	(4,173)	P (36)	(120)	(4,053)	--	--	(4,173)	--	(671)	(127 Cat.)
Pearson-Lewis	Piute	1,973	P 36	60	1,913	--	--	1,973	--	265	127 Cat.
P-Hill	Piute	2,200	--	60	2,140	--	--	2,200	--	406	Unallot.
New Rough Canyon	Sanpete	(5,123)	S (1,417) P (142)	(3,975)	(1,043)	(105)	--	(5,123)	--	(522)	(591 Shp.)
Dry Hill	Sanpete	841	S 20	841	--	--	--	841	--	43	Unallot.
Rough Canyon	Sanpete	4,282	S 1,397 P 142	3,134	1,043	105	--	4,282	--	479	591 Shp.
New Sand Ledges	--	(8,360)	S (1,832) P (608)	--	(8,360)	--	--	(8,360)	--	(954)	(517 Cat.)
Lost Creek	N. Sevier	2,164	S 1,162 P 588	--	2,164	--	--	2,164	--	212	66 Cat.
Sand Ledges	N. Sevier	6,196	S 670 P 20	--	6,196	--	--	6,196	--	742	451 Cat.
New Twist	--	(9,358)	S (440)	(2,630)	(6,728)	--	--	(9,358)	--	(669)	(526 Cat.) (57 Shp.)
Canal	N. Sevier	4,051	S 440	--	4,051	--	--	4,051	--	408	317 Cat. 57 Shp.
Twist	N. Sevier	5,307	--	2,630	2,677	--	--	5,307	--	261	209 Cat.
COMBINATION TOTALS		270,636	S 38,758 P 32,023	68,107	178,079	24,416	7,340	233,910	29,386	24,985	14,073 Shp. 4,510 Cat.

APPENDIX I-1, TABLE B (concluded)

AUMs Current Licensed Use	Proposed and Current Season of Use: Cattle	Proposed and Current Season of Use: Sheep	Current Wildlife Use (AUMs): Antelope & Deer	Current Wildlife Use (AUMs): Elk	Projected Wildlife Needs (AUMs): Antelope & Deer	Projected Wildlife Needs (AUMs): Elk	Allotments
(780 Cat.) (691 Shp.)	(9/1-5/31)	(9/1-3/31)	(806 dr.) (14 ant.)	(252)	(1,750 dr.) (14 ant.)	(252)	New Narrows
89 Shp.	--	4/1-5/31 12/1-1/31	103 dr.	5	133 dr.	5	
41 Cat.	6/1-7/30	--	103 dr.	5	166 dr.	5	
13 Cat. 11 Shp.	5/10-5/31	3/16-4/15	52 dr.	--	52 dr.	--	
37 Shp.	--	1/16-1/25	65 dr.	18	65 dr.	18	
40 Shp.	--	1/16-1/31	207 dr.	15	207 dr.	15	
448 Cat. 213 Shp.	12/1-5/31	2/6-3/31	138 dr. 7 ant.	110	622 dr. 7 ant.	110	
278 Cat. 301 Shp.	12/1-3/10 5/16-6/30	1/16-3/31	138 dr. 7 ant.	99	505 dr. 7 ant.	99	
(418 Cat.) (91 Shp.)	(5/1-6/30) (10/1-10/25)	(5/1-6/30) (10/1-10/25)	(710 dr.)	(45)	(1,750 dr.)	(45)	New North Cove
418 Cat.	5/1-6/30	same 10/1-10/25	448 dr.	40	1,283 dr.	40	
91 Shp.	--	4/15-6/25	241 dr.	5	446 dr.	5	
Unallot.	--	--	21 dr.	--	21 dr.	--	
(1,289 Cat.) (196 Shp.)	(9/1-5/31)	(9/1-5/31)	(687 dr.) (25 ant.)	(210)	(1,277 dr.) (25 ant.)	(210)	New Otter Creek
375 Cat.	--	12/1-12/31 3/1-5/31	207 dr.	15	293 dr.	15	
177 Cat.	4/21-6/20	--	22 dr. 6 ant.	34	36 dr. 6 ant.	34	
737 Cat.	10/15-12/31 4/16-5/31	--	182 dr. 19 ant.	161	226 dr. 19 ant.	161	
196 Shp.	--	9/16-10/15 5/16-6/30	276 dr.	--	722 dr.	--	
(56 Cat.)	(5/15-7/31)	--	(414 dr.)	(20)	(414 dr.)	(20)	New Pearson-Lewis
56 Cat.	6/1-10/5	--	138 dr.	--	138 dr.	--	
Unallot.	--	--	276 dr.	20	276 dr.	20	
(555 Shp.)	--	(11/1-3/31)	(288 dr.)	--	(288 dr.)	(26)	New Rough Canyon
Unallot.	--	--	49 dr.	--	49 dr.	--	
555 Shp.	--	1/1-3/10	239 dr.	--	239 dr.	26	
(371 Cat.)	(5/1-6/15)	--	(345 dr.) (3 ant.)	(89)	(777 dr.) (3 ant.)	(145)	New Sand Ledges
66 Cat.	5/1-5/31	--	129 dr. 3 ant.	14	202 dr. 3 ant.	14	
305 Cat.	5/1-6/30	--	216 dr.	75	575 dr.	131	
(532 Cat.) (44 Shp.)	(12/1-4/30)	(12/1-4/30)	(86 dr.)	--	(158 dr.)	--	New Twist
323 Cat. 44 Shp.	12/1-4/30	10/15-12/10 4/1-4/30	34 dr.	--	34 dr.	--	
209 Cat.	4/20-6/10	--	52 dr.	--	124 dr.	--	
8,811 Shp. 4,051 Cat.			8,216 dr. 71 ant.	1,023	14,945 dr. 107 ant.	1,273	COMBINATION TOTALS

APPENDIX I-2

BLM Planning System and the Mountain Valley Planning Area

The following four steps are an integral part of the BLM planning system and were fully utilized during preparation of this EIS for the Mountain Valley Planning Area.

1. Land and Resource Inventory Data are collected on current resource supply and production, condition, and trend. Data have been collected in the following land use categories: lands, minerals, forest products, range management, watershed, wildlife habitat, and recreation. Additional physical data, including topography, climate, geology, soils, vegetation, erosion condition, hazards, developments, and access, have been collected. These inventories were completed and updated in 1978 and 1979.

2. Unit Resource Analysis (URA) is a document containing a summary of the resource inventories and describing the physical profile of the area. It also describes the present situation with respect to current land uses, production, trend, condition, and problems. In addition, it develops technically feasible projections for potential resource enhancement, improvement, and production capability. This document was prepared in 1979.

3. Planning Area Analysis (PAA), completed in 1979, is a collection and analysis of socioeconomic data for the area. It contains economic demand projections for each resource and social value analysis.

4. Management Framework Plan (MFP) is a land use plan that is developed using resource management opportunities identified in the URA plus socioeconomic data presented in the PAA. It is organized around the seven land use categories (identified in Land and Resource Inventory section above). The first step in developing the MFP is to protect each resource use independently, taking into account resource capability, technical feasibility, physical limitations, laws, regulations, policy, and demand. Conflicts between existing uses and other potential uses are then identified and described by an interdisciplinary team under the direction of a BLM manager.

Whenever a conflict is encountered in MFP Step 1 recommendations, the BLM manager studies the land use options available to him. Based on comparative analysis and MFP Step 2, the BLM manager selects an option which best meets his management objectives and identifies any trade-offs or compromises made as a result of that selection. Tentative multiple use management recommendations were made. As public input is collected and analyzed (including analysis in the EIS) on these tentative recommendations, final multiple use decisions (MFP Step 3) for the area will be developed. This EIS will provide the manager with additional information to consider in the decision-making process.

(continued)

Land use conflicts in the area resulted in a reduction or modification of the range management proposed action. These conflicts were associated with aquatic/riparian management, big game habitat requirements, and watershed values. Conflicts with wildlife habitat management, primarily critical winter ranges for deer, resulted in significant constraints on the proposed action. Although acreages authorized for grazing use were not affected, the proposed level of livestock use (initial action and long term) was reduced. The season of use was modified on selected allotments in critical deer winter range to reduce competition between deer and livestock for available forage. The projected allocation of the expected forage production is a result of proposed vegetation treatments and improvements in range condition. Areas otherwise suitable for vegetation treatments have been reduced to accommodate sagegrouse and riparian habitat needs.

APPENDIX II-1

Present and Proposed Forage Allocations

The tables which follow show the current forage use, the proposed initial and long-term allocations, and the differences between these three levels of use. Each table corresponds to an alternative (i.e., table A corresponds to Alternative A; table B to Alternative B, etc.), and is divided into four components, as follows: (1) allow existing level of livestock grazing to increase; (2) maintain existing level of livestock grazing; (3) reduce existing level of livestock grazing; and (4) no livestock grazing. There is an entry for each proposed allotment under each alternative.

APPENDIX II-1

TABLE A

Optimize Non-Livestock Resources

Component Allotment	Current Vegetation Use (AUMs)					Initial Vegetation Allocation (AUMs)					Change Between Current Use and Initial Vegetation Allocations (AUMs)				
	Livestock		Wildlife			Livestock		Wildlife			Livestock		Wildlife		
	Cat.	Shp.	Deer	Antl.	Elk	Cat.	Shp.	Deer	Antl.	Elk.	Cat.	Shp.	Deer	Antl.	Elk
1. Allow Existing Level of Livestock Grazing to Increase															
(No allotments included in this alternative.)															
2. Maintain Existing Level of Livestock Grazing															
Bear Valley	147	0	207	0	10	147	0	207	0	10	0	0	0	0	0
Cedar Grove	110	1,063	60	37	114	110	1,063	140	80	243	0	0	+80	+43	+129
Hunter Spring	68	0	216	0	0	68	0	216	0	0	0	0	0	0	0
Indian Hollow	0	42	76	0	16	0	42	92	0	29	0	0	+16	0	+13
Kingston Canyon	72	23	104	0	0	72	23	104	0	0	0	0	0	0	0
New Dry Lake	81	60	689	0	5	81	60	689	0	5	0	0	0	0	0
New East Fork	109	0	258	0	0	109	0	258	0	0	0	0	0	0	0
New Gunnison	391	699	623	0	275	391	699	856	0	275	0	0	+233	0	0
New Marysvale	24	0	344	0	15	24	0	372	0	15	0	0	+28	0	0
New Pearson/-Lewis	56	0	414	0	20	56	0	414	0	20	0	0	0	0	0
North Hollow	72	0	208	0	30	72	0	71	0	30	0	0	-137	0	0
Ogden	102	0	103	0	10	102	0	182	0	10	0	0	+79	0	0
Piute Dam	0	72	34	0	0	0	72	42	0	0	0	0	+8	0	0
Rock Canyon	262	0	212	0	0	262	0	411	0	0	0	0	+199	0	0
Rocky Ford	285	0	388	0	0	285	0	388	0	0	0	0	0	0	0
Timber Canyon	0	588	623	0	127	0	588	668	0	193	0	0	+45	0	+66
Uinta	0	109	13	0	7	0	109	104	0	46	0	0	+91	0	+39
Subtotal	1,779	2,656	4,572	37	629	1,779	2,656	5,214	80	876	0	0	+642	+43	+247
3. Reduce Existing Level of Livestock Grazing															
Apple Spring	0	85	114	0	15	0	53	136	0	24	0	-32	+22	0	+9
Aurora	49	540	345	0	0	49	371	522	0	0	0	-169	+177	0	0
Axhandle	118	44	206	0	28	14	50	206	0	28	-104	+6	0	0	0
Chicken Coop	17	249	216	2	62	89	0	384	2	62	+72	-249	+168	0	0
Denmark	0	2,306	172	0	0	0	1,480	480	0	0	0	-826	+308	0	0
Fayette Cattle	1,149	268	537	0	0	706	183	537	0	67	-443	-85	0	0	+67
Flat Canyon (Sanpete)	350	0	145	0	0	23	0	145	0	18	-327	0	0	0	+18
Gypsum	0	881	517	10	130	139	0	1,113	10	130	+139	-881	+596	0	0
Hayes Canyon	0	449	190	0	0	0	314	367	0	0	0	-135	+177	0	0

APPENDIX II-1, TABLE A (continued)

Component Allotment	Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Change Between Initial and Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Alternative Season of Use	Grazing Treatments[a] and Range Developments	
Bear Valley	150	0	207	0	20	+3	0	0	0	+10	No change	None Treatment 5	
Cedar Grove	330	1,659	280	160	486	+220	+596	+140	+80	+243	10/6-11/15	Reservoirs Treatment 5	5 ea.
Hunter Spring	167	0	216	0	0	+99	0	0	0	0	10/1-12/31	Chain/Seed Treatment 1	500 ac.
Indian Hollow	0	108	148	0	83	0	+66	+56	0	+54	No change	None Treatment 5	
Kingston Canyon	72	84	104	0	0	0	+61	0	0	0	5/1-6/30 (c)	None Treatment 4	
New Ory Lake	301	0	1,051	0	5	+220	-60	+362	0	0	10/1-2/28 5/21-6/30	Chain/Seed Fence Treatment 2	1,400 ac. 2 mi.
New East Fork	120	0	271	0	0	+11	0	+13	0	0	No change	None Treatment 2	
New Gunnison	369	2,016	902	0	375	-22	+1,317	+46	0	+100	4/16-6/15 (c) 10/1-10/31 (s)	Chain/Seed Treatment 2	600 ac.
New Marysvale	82	0	395	0	30	+58	0	+23	0	+15	5/1-7/15 Tate No changes others	Fence Treatment 2	3 mi.
New Pearson/-Lewis	127	0	443	0	40	+71	0	+29	0	+20	5/15-7/31	Pipeline Fence Treatment 2	1.5 mi. 5 mi.
North Hollow	72	0	223	0	60	0	0	+152	0	+30	5/16-6/30	Browse plant Treatment 4	995 ac.
Ogden	0	0	202	0	20	-102	0	+20	0	+10	No change	None Treatment 5	
Piute Dam	0	123	381	0	0	0	+51	+339	0	0	12/1-2/28	Pipeline Treatment 1	0.1 mi.
Rock Canyon	456	0	411	0	0	+194	0	0	0	0	5/1-8/31	None Treatment 2	
Rocky Ford	386	0	438	0	0	+101	0	+50	0	0	No change	None Treatment 2	
Timber Canyon	0	588	690	0	215	0	0	+22	0	+22	No change	None Treatment 5	
Uinta	0	109	104	0	46	0	0	0	0	0	No change	None Treatment 4	
Subtotal	2,632	4,687	6,466	160	1,380	+853	+2,031	+1,252	+80	+504		b	
Apple Spring	0	43	136	0	24	0	-10	0	0	0	No change	None Treatment 5	
Aurora	49	445	522	0	4	0	+74	0	0	+4	No change	Chain/Seed Plow/Seed Pipeline Treatment 4	440 ac. 250 ac. 0.5 mi.
Axhandle	14	50	228	0	50	0	0	+22	0	+22	5/16-8/1(c) 5/16-6/30 (s)	Fence Treatment 5	5 mi.
Chicken Coop	89	0	384	2	62	0	0	0	0	0	No change	Fence Treatment 4	4 mi.
Denmark	0	2,397	480	0	0	0	+917	0	0	0	No change	None Treatment 2	
Fayette Cattle	1,314	296	537	0	67	+608	+113	0	0	0	6/1-9/30(c&s)	None Treatment 5	
Flat Canyon (Sanpete)	79	0	145	0	18	+56	0	0	0	0	5/1-6/30	Fence Treatment 4	5 mi.
Gypsum	331	71	1,503	10	130	+192	+71	+390	0	0	3/1-5/31	Chain/Seed Spring Development Fence Treatment 2	1,760 ac. 1 mi.
Hayes Canyon	0	314	367	0	0	0	0	0	0	0	No change	Chain/Seed Spray Treatment 5	240 ac. 200 ac.

(continued)

Component Allotment	Current Vegetation Use (AUMs)					Initial Vegetation Allocation (AUMs)					Change Between Current Use and Initial Vegetation Allocations (AUMs)				
	Livestock		Wildlife			Livestock		Wildlife			Livestock		Wildlife		
	Cat.	Shp.	Deer	Antl.	Elk	Cat.	Shp.	Deer	Antl.	Elk.	Cat.	Shp.	Deer	Antl.	Elk
Hop Creek	0	151	30	0	21	0	94	35	0	39	0	-57	+5	0	+18
Junction	350	0	414	0	0	80	0	468	0	0	-270	0	+54	0	0
Little Valley	476	0	184	0	0	298	0	356	0	0	-178	0	+172	0	0
Maple Canyon	0	119	77	0	0	0	100	77	0	11	0	-19	0	0	+11
New Antelope	0	2,749	537	0	0	0	2,598	537	0	95	0	-151	0	0	+95
New Elbow	0	267	972	0	0	0	65	1,079	0	0	0	-202	+107	0	0
New Elsinore	0	127	30	0	0	0	56	218	0	0	0	-71	+188	0	0
New Fishlake	0	650	434	29	107	0	367	953	65	180	0	-283	+519	+36	+73
New Lone Cedar	0	1,862	524	0	0	0	1,271	1,013	0	0	0	-591	+489	0	0
New Narrows	780	691	806	14	252	304	401	1,728	28	252	-476	-290	+922	+14	0
New Otter Creek	1,289	196	687	25	210	1,007	0	1,277	50	210	-282	-196	+590	+25	0
New Rough Canyon	0	555	288	0	0	0	208	288	0	26	0	-347	0	0	+26
New Twist	532	44	86	0	0	507	0	155	0	0	-25	-44	+69	0	0
Plateau	0	367	138	0	25	0	61	336	0	25	0	-306	+198	0	0
Red Canyon	565	0	222	0	0	173	0	430	0	0	-392	0	+208	0	0
River	40	0	14	0	0	32	0	14	0	0	-8	0	0	0	0
Sanpitch (North)	0	184	16	0	0	0	78	18	0	0	0	-106	+2	0	0
South Valley	0	2,045	298	0	0	0	1,236	298	0	0	0	-809	0	0	0
Under-the-Rim	0	164	29	0	0	0	75	29	0	0	0	-89	0	0	0
Subtotal	5,715	14,993	8,228	80	850	3,421	9,061	13,199	155	1,167	-2,294	-5,932	+4,971	+75	+317
4. No Livestock Grazing															
East Piute	215	0	241	0	0	0	0	286	0	0	-215	0	+45	0	0
Horse Ridge	0	105	126	0	0	0	0	126	0	0	0	-105	0	0	0
Hunt	0	35	21	0	0	0	0	70	0	0	0	-35	+49	0	0
Jones	0	10	14	0	0	0	0	25	0	0	0	-10	+11	0	0
Joseph	153	0	34	0	0	0	0	59	0	0	-153	0	+25	0	0
Middle Hollow	82	0	114	0	24	0	0	33	0	24	-82	0	-81	0	0
New Monroe Co-op	0	820	469	0	5	0	0	1,441	0	5	0	-820	+972	0	0
New North-Cove Mtn.	418	91	710	0	45	0	0	1,402	0	45	-418	-91	+692	0	0
New Sand Ledges	371	0	345	3	89	0	0	384	3	145	-371	0	+39	0	+56
Poulson	29	0	9	0	0	0	0	23	0	0	-29	0	+14	0	0
Rick's Pasture	11	0	9	0	0	0	0	13	0	0	-11	0	+4	0	0
South Hollow	266	0	305	0	51	0	0	193	0	51	-266	0	-112	0	0

Component Allotment	Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Change Between Initial and Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Alternative Season of Use	Grazing Treatments[a] and Range Developments
Hop Creek	0	94	35	0	39	0	0	0	0	0	No change	None Treatment 5
Junction	180	0	468	0	0	+100	0	0	0	0	4/1-7/1	Spray 1,000 ac. Pipeline 7.5 mi. Fence 2 mi. Treatment 2
Little Valley	406	0	356	0	0	+108	0	0	0	0	No change	None Treatment 2
Maple Canyon	0	100	93	0	11	0	0	+16	0	0	10/16-11/15 5/1-5/31	None Treatment 5
New Antelope	0	2,957	537	0	190	0	+359	0	0	+95	10/16-5/31	None Treatment 2
New Elbow	0	774	1,079	0	0	0	+709	0	0	0	11/1-2/25	None Treatment 2
New Elsinore	0	171	218	0	0	0	+115	0	0	0	2/1-2/28	None Treatment 2
New Fishlake	0	1,056	1,886	158	955	0	+689	+933	+93	+775	6/1-6/30	None Treatment 2
New Lone Cedar	0	1,903	1,013	0	0	0	+632	0	0	0	12/1-6/30	None Treatment 2
New Narrows	790	900	1,728	56	504	+486	+499	0	+28	+252	9/1-5/31 (c) 9/1-3/31 (s)	Fence 2 mi. Treatment 2
New Otter Creek	1,363	484	1,277	100	317	+356	+484	0	+50	+107	9/1-5/31	Chain/Seed 400 ac. Fence 1 mi. Treatment 2
New Rough Canyon	0	537	388	0	52	0	+329	100	0	+26	1/1-3/10	None Treatment 1
New Twist	583	0	268	0	0	+76	0	+113	0	0	4/30-6/30	None Treatment 2 Fence 1 mi.
Plateau	0	89	336	0	25	0	+28	0	0	0	No change	None Treatment 5
Red Canyon	259	0	430	0	0	+86	0	0	0	0	No change	None Treatment 2
River	40	0	14	0	0	+8	0	0	0	0	No change	None Treatment 5
Sanpitch (North)	0	87	18	0	0	0	+9	0	0	0	5/1-5/31 10/1-10/30	None Treatment 3
South Valley	0	1,299	298	0	0	0	+63	0	0	0	No change	None Treatment 5
Under-the-Rim	0	75	29	0	0	0	0	0	0	0	No change	None Treatment 5
Subtotal	5,497	14,142	14,773	326	2,448	+2,076	+5,081	+1,574	+171	+1,281		c
East Piute	0	0	378	0	0	0	0	+92	0	0	No change	None Treatment 6
Horse Ridge	0	105	154	0	28	0	+105	+28	0	+28	No change	Chain/Seed 400 ac. Treatment 6 (long term 4)
Hunt	0	0	76	0	0	0	0	+6	0	0	--	None Treatment 6
Jones	0	0	25	0	0	0	0	0	0	0	--	None Treatment 6
Joseph	0	0	76	0	0	0	0	+17	0	0	No change	None Treatment 6
Middle Hollow	0	0	96	0	34	0	0	+63	0	+10	5/16-6/30	Browse/Seed 500 ac. Treatment 6
New Monroe Co-op	0	125	1,723	0	10	0	+125	+282	0	+5	--	Chain/Seed 400 ac. Treatment 6 (long term 2)
New North-Cove Mtn.	935	0	1,738	0	90	+935	0	+336	0	+45	5/1-6/30 10/1-10/25	Chain/Seed 1,780 ac. Sage/Burn 600 ac. Contour/Seed 1,200 ac. Fence 1 mi. Treatment 6 (long term 2)
New Sand Ledges	231	0	777	6	290	+231	0	+393	+3	+145	5/1-6/15	Chain/Seed 1,960 ac. Fence 6.0 mi. Treatment 6 (long term 2)
Poulson	0	0	23	0	0	0	0	0	0	0	3/20-4/21	None Treatment 6
Rick's Pasture	0	0	13	0	0	0	0	0	0	0	5/1-7/1	None Treatment 6
South Hollow	198	0	305	0	102	+198	0	+112	0	+51	5/16-6/30	Chain/Seed 200 ac Pipeline 0.5 mi. Seed/Browse 1,075 ac. Treatment 6 (long term 4)

(continued)

APPENDIX II-1, TABLE A (concluded)

Component Allotment	Long-Term Vegetation Allocation (AUMs)					Change Between Initial and Long-Term Vegetation Allocation (AUMs)					Alternative Season of Use	Grazing Treatments[a] and Range Developments
	Livestock		Wildlife			Livestock		Wildlife				
	Cat.	Shp.	Deer	Antl.	Elk	Cat.	Shp.	Deer	Antl.	Elk.		
Wilson Dump	0	0	52	0	0	0	0	0	0	0	--	None Treatment 6
Wood Hollow	0	0	99	0	48	0	0	0	0	0	--	None Treatment 6
Subtotal	1,364	230	5,535	6	602	+1,364	+230	+1,329	+3	+284		d
GRAND TOTAL	9,493	19,059	26,774	492	4,430	+4,293	+7,342	+4,155	+254	+2,069		e

[e]Total Range Developments

Chain/Seed in PJ	10,080.0 ac.	(13 allotments)
Plow/Seed in sage	250.0 ac.	(1 allotment)
Seed/Browse (interseed)	2,570.0 ac.	(3 allotments)
Spray 2,4-D in sage	1,200.0 ac.	(2 allotments)
Burn/Seed in sage	600.0 ac.	(1 allotment)
Contour/Seed	1,200.0 ac.	(1 allotment)
Total	(15,900.0 ac.)	
Pipeline	10.1 mi.	(5 allotments)
Fence	38.0 mi.	(12 allotments)
Reservoirs	5.0 ea.	(1 allotment)

(continued)

APPENDIX II-1, TABLE A (continued)

Component	Current Vegetation Use (AUMs)					Initial Vegetation Allocation (AUMs)					Change Between Current Use and Initial Vegetation Allocations (AUMs)				
	Livestock		Wildlife			Livestock		Wildlife			Livestock		Wildlife		
Allotment	Cat.	Shp.	Deer	Antl.	Elk	Cat.	Shp.	Deer	Antl.	Elk.	Cat.	Shp.	Deer	Antl.	Elk
Wilson Dump	0	20	9	0	0	0	0	52	0	0	0	-20	+43	0	0
Wood Hollow	0	213	254	0	33	0	0	99	0	48	0	-213	-155	0	+15
Subtotal	1,545	1,294	2,660	3	247	0	0	4,206	3	318	-1,545	-1,294	+1,546	0	+71
GRAND TOTAL	9,039	18,943	15,460	120	1,726	5,200	11,717	22,619	238	2,361	-3,839	-7,226	+7,159	+118	+635

[a]Grazing treatments are described in Chapter 2. The following shows the acreage and allotments for each treatment.

Treatment	1	2	3	4	Initial Total	Long-Term Totals
1	0	5,237(2)	5,123(1)	0	10,360(3)	10,360 (3)
2	0	65,264(7)	229,518(13)	53,127(3)	347,909(23)	294,782 (20)
3	0	0	599(1)	0	599(1)	599 (1)
4	0	4,207(3)	20,674(3)	3,764(2)	28,645(8)	20,643 (6)
5	0	51,646(5)	42,866(10)	0	94,512(15)	94,512 (15)
6	0	0	0	17,947(9)	17,947(9)	79,076 (14)
Totals	0	126,354(17)	298,780(28)	74,838(14)	499,972(59)	

[b]Component 2 Range Developments

Chain/Seed in PJ	2,500.0 ac.
Seed/Browse	995.0 ac.
Pipeline	1.6 mi.
Fence	10.0 mi.
Reservoirs	5.0 ea.

[c]Component 3 Range Developments

Chain/Seed in PJ	2,840.0 ac.
Plow/Seed in sagebrush	250.0 ac.
Spray 2,4-D	1,200.0 ac.
Pipeline	8.0 mi.
Fence	21.0 mi.

[d]Component 4 Range Developments

Chain/Seed in PJ	4,740.0 ac.
Seed/Browse	1,575.0 ac.
Burn/Seed	600.0 ac.
Contour/Seed	1,200.0 ac.
Pipeline	0.5 mi.
Fence	7.0 mi.

TABLE B

Optimize Livestock Grazing

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Initial Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Change Between Current Use and Initial Vegetation Allocations (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk
1. Allow Existing Level of Livestock Grazing to Increase															
Apple Spring	0	85	114	0	15	0	86	93	0	24	0	+1	-21	0	+9
Aurora	49	540	345	0	0	49	725	260	0	0	0	+185	-85	0	0
Bear Valley	147	0	207	0	10	167	0	120	0	10	+20	0	-85	0	0
Cedar Grove	110	1,063	60	37	114	324	1,696	29	37	114	+214	+633	-31	0	0
Chicken Coop	17	249	216	2	62	126	354	116	2	62	+109	+105	-100	0	0
East Piute	215	0	241	0	0	166	92	201	0	0	-49	+92	-40	0	0
Gypsum	0	881	517	10	130	199	860	355	10	130	+199	-21	-162	0	0
Hayes Canyon	0	449	190	0	0	0	483	190	0	0	0	+34	0	0	0
Hunt	0	35	21	0	0	0	55	18	0	0	0	+20	-3	0	0
Hunter Spring	68	0	216	0	0	186	0	177	0	0	+118	0	-39	0	0
Indian Hollow	0	42	76	0	16	0	179	76	0	16	0	+137	0	0	0
Jones	0	10	14	0	0	0	13	13	0	0	0	+3	-1	0	0
Joseph	153	0	34	0	0	172	0	25	0	0	+19	0	-9	0	0
Junction	350	0	414	0	0	391	0	333	0	0	+41	0	-81	0	0
Kingston Canyon	72	23	104	0	0	72	84	104	0	0	0	+61	0	0	0
New Ory Lake	81	60	689	0	5	401	0	563	0	5	+320	-60	-126	0	0
New East Fork	109	0	258	0	0	142	0	258	0	0	+33	0	0	0	0
New Elbow	0	267	972	0	0	0	822	647	0	0	0	+555	-325	0	0
New Fishlake	0	650	434	29	107	0	1,111	376	29	107	0	+461	-58	0	0
New Gunnison	391	699	623	0	275	328	1,286	624	0	275	-63	+587	+1	0	0
New Marysvale	24	0	344	0	15	222	0	230	0	15	+198	0	-114	0	0
New Monroe Co-op	0	820	469	0	5	0	1,104	403	0	5	0	+284	-66	0	0
New Narrows	780	691	806	14	252	790	900	806	14	252	+10	+209	0	0	0

APPENDIX II-1, TABLE 8 (continued)

Component Allotment	Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Change Between Initial and Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Alternative Season of Use	Grazing Treatment[a] and Range Developments	
Apple Spring	0	86	93	0	24	0	0	0	0	0	No Change	None	
												Treatment 5	
Aurora	53	725	260	0	0	+4	0	0	0	0	No Change	Chain/Seed	440 ac.
												Plow/seed	250 ac.
												Pipeline	0.5 mi.
												Treatment 4	
Bear Valley	335	0	120	0	10	+168	0	0	0	0	No Change	Fence	5 mi.
												Pipeline	3.5 mi.
												Treatment 2	
Cedar Grove	2,303	2,597	33	44	130	+1,979	+901	+4	+7	+16	No Change	Control burn	500 ac.
												Fence	20 mi.
												Reservoir	5 ea.
												Treatment 2	
Chicken Coop	126	354	116	2	62	0	0	0	0	0	No Change	Chain/Seed	200 ac.
												Treatment 5	
East Piute	283	92	229	0	0	+117	0	+28	0	0	11/1-2/28(c&s)	Fence	1.5 mi.
												Treatment 1	
Gypsum	331	1,135	429	10	130	+132	+275	+74	0	0	11/1-5/31(c&s)	Chain/Seed	1,760 ac.
												Fence	5 mi.
												Spring	1 ea.
												Treatment 2	
Hayes Canyon	0	551	198	0	0	0	+68	+8	0	0	No Change	Chain/Seed	420 ac.
												Spray	200 ac.
												Treatment 5	
Hunt	0	55	18	0	0	0	0	0	0	0	5/1-5/15	None	
												Treatment 4	
Hunter Spring	260	0	177	0	0	+74	0	0	0	0	10/1-12/31	Chain/Seed	500 ac.
												Fence	3.5 mi.
												Treatment 1	
Indian Hollow	0	200	92	0	29	0	+21	+16	0	+13	No Change	None	
												Treatment 5	
Jones	0	13	13	0	0	0	0	0	0	0	No Change	None	
												Treatment 4	
Joseph	237	0	29	0	0	+65	0	+4	0	0	2/1-4/15	None	
												Treatment 5	
Junction	391	0	383	0	0	0	0	+50	0	0	11/1-2/15	Spray	1,000 ac.
												Pipeline	7.5 mi.
												Treatment 2	
Kingston Canyon	72	84	104	0	0	0	0	0	0	0	11/16-1/15 (c)	None	
											10/1-10/10 (s)	Treatment 1	
New Dry Lake	1,595	0	602	0	5	+1,194	0	+39	0	0	5/21-6/30(c)	Chain/Seed	1,400 ac.
											6/1-6/30(c)	Spray	1,000 ac.
												Fence	16 mi.
												Spring	1 ea.
												Stock trail	3 mi.
												Exclosure	1 (10 ac.)
												Treatment 2	
New East Fork	147	0	258	0	0	+5	0	0	0	0	10/1-12/31	None	
												Treatment 2	
New Elbow	0	1,195	708	0	0	0	+373	+61	0	0	11/1-2/25	Chain/Seed	1,500 ac.
												Fence	4.5 mi.
												Pipeline	18.5 mi.
												Treatment 2	
New Fishlake	0	3,598	376	29	164	0	+2,487	0	0	+57	10/10-11/30(s)	Burn/Seed	1,400 ac.
											6/1-6/30(s)	Chain/Seed	700 ac.
												Pipeline	3 mi.
												Reservoir	2 ea.
												Treatment 2	
New Gunnison	531	2,333	743	0	275	+203	+1,047	+119	0	0	4/16-6/15(c)	Chain/Seed	600 ac.
											11/1-3/30	Fence	4.5 mi.
												Stock trail	0.25 mi.
												Treatment 2	
New Marysvale	222	0	230	0	15	0	0	0	0	0	5/1-7/15 Tate	None	
											No Change Others	Treatment 2	
New Monroe Co-op	0	1,390	463	0	5	0	+286	+60	0	0	9/1-3/31	Chain/Seed	400 ac.
											6/1-6/30	Pipeline	10.5 mi.
												Reservoir	1 ea.
												Spring	1 ea.
												Trough	11 ea.
												Treatment 2	
New Narrows	2,521	2,677	963	14	252	+1,731	+1,777	+157	0	0	9/1-5/31(c)	Chain/Seed	4,820 ac.
											9/1-3/31(s)	Fence	11.5 mi.
												Pipeline	6 mi.
												Reservoirs	4 ea.
												Springs	2 ea.
												Seed	1,000 ac.
												Treatment 2	

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Initial Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Change Between Current Use and Initial Vegetation Allocations (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk
New North Cove Mountain	418	91	710	0	45	612	472	595	0	45	+194	+381	-115	0	0
New Otter Creek	1,289	196	687	25	210	1,387	484	640	25	210	+98	+288	-47	0	0
New Pearson/-Lewis	56	0	414	0	20	239	0	403	0	20	+183	0	-11	0	0
New Sand Ledges	371	0	345	3	89	528	0	292	3	89	+157	0	-53	0	0
New Twist	532	44	86	0	0	530	57	79	0	0	-2	+13	-7	0	0
North Hollow	72	0	208	0	30	110	0	44	0	30	+38	0	-164	0	0
Ogden	102	0	103	0	10	329	0	85	0	10	+227	0	-18	0	0
Piute Dam	0	72	34	0	0	0	123	34	0	0	0	+51	0	0	0
Plateau	0	367	138	0	25	0	443	85	0	25	0	+76	-53	0	0
Rock Canyon	262	0	212	0	0	388	0	212	0	0	+126	0	0	0	0
Rocky Ford	285	0	388	0	0	393	0	355	0	0	+108	0	-33	0	0
Timber Canyon	0	588	623	0	127	0	742	623	0	84	0	+154	0	0	-43
Uinta	0	109	13	0	7	0	130	13	0	7	0	+21	0	0	0
Wilson Dump	0	20	9	0	0	0	47	7	0	0	0	+27	-2	0	0
Subtotal	5,953	8,051	11,334	120	1,569	8,251	12,348	9,484	120	1,535	+2,298	+4,297	-1,850	0	-34
2. Maintain Existing Level of Livestock Grazing															
Poulson	29	0	9	0	0	29	0	7	0	0	0	0	-2	0	0
Rick's Pasture	11	0	9	0	0	11	0	9	0	0	0	0	0	0	0
River	40	0	14	0	0	40	0	14	0	0	0	0	0	0	0
Subtotal	80	0	32	0	0	80	0	30	0	0	0	0	-2	0	0
3. Reduce Existing Level of Livestock Grazing															
Axhandle	118	44	206	0	28	42	47	206	0	0	-76	+3	0	0	-28
Denmark	0	2,306	172	0	0	0	1,896	123	0	0	0	-410	-49	0	0
Fayette Cattle	1,149	268	537	0	0	760	183	537	0	0	-389	-85	0	0	0
Flat Canyon (Sanpete)	350	0	145	0	0	49	0	143	0	0	-301	0	-2	0	0
Hop Creek	0	151	30	0	21	0	135	30	0	21	0	-16	0	0	0
Horse Ridge	0	105	126	0	0	0	46	84	0	0	0	-59	-42	0	0

Component Allotment	Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Change Between Initial and Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Alternative Season of Use	Grazing Treatments[a] and Range Developments	
New North Cove Mtn.	1,419	978	683	0	45	+807	+506	+88	0	0	5/1-6/30(c&s) 10/1-10/25(c&S)	Chain/Seed Burn/Seed Fence Exclosure Contour/Seed Treatment 2	1,780 ac. 600 ac. 6 mi. 1 (10 ac.) 1,200 ac.
New Otter Creek	2,066	630	849	25	210	+679	+146	+209	0	0	9/1-5/31(c&s)	Chain/Seed Springs Pipeline Fence Reservoir Troughs Treatment 2	400 ac. 4 ea. 7 mi. 3.5 mi. 1 ea. 2 ea.
New Pearson/-Lewis	367	0	403	0	20	+128	0	0	0	0	5/15-7/31	Pipeline Treatment 2	1.5 mi.
New Sand Ledges	876	0	336	3	89	+348	0	+44	0	0	5/1-6/15	Chain/Seed Burn Treatment 2	1,960 ac. 750 ac.
New Twist	680	80	86	0	0	+150	+23	+7	0	0	12/1-4/30(c&s)	Pipeline Trough Treatment 2	0.5 mi. 1 ea.
North Hollow	110	0	44	0	30	0	0	0	0	0	5/10-7/10	None Treatment 5	
Ogden	329	0	85	0	10	0	0	0	0	0	No Change	None Treatment 5	
Piute Dam	0	465	39	0	0	0	+342	+5	0	0	12/1-2/28	Pipeline Treatment 1	0.1 mi.
Plateau	0	443	137	0	25	0	0	+52	0	0	No Change	Control Burn Treatment 5	1,200 ac.
Rock Canyon	520	0	411	0	0	+132	0	+199	0	0	5/1-8/31	Chain/Seed Fence Pipeline Raintraps Treatment 2	640 ac. 7 mi. 2 mi. 2 ea.
Rocky Ford	1,280	0	355	0	0	+887	0	0	0	0	No Change	Chain/Seed Spring Reservoir Treatment 2	1,200 ac. 1 ea. 1 ea.
Timber Canyon	0	994	623	0	127	0	+252	0	0	+43	No Change	Chain/Seed Burn/Seed Treatment 5	1,040 ac. 220 ac.
Uinta	0	130	15	0	15	0	0	+2	0	+8	No Change	None Treatment 4	
Wilson Dump	0	47	7	0	0	0	0	0	0	0	No Change	None Treatment 4	
Subtotals	17,054	20,852	10,710	127	1,672	+8,803	+8,504	+1,226	+7	+137		b	
Poulson	53	0	8	0	0	+24	0	+1	0	0	3/20-4/21	None Treatment 5	
Rick's Pasture	11	0	9	0	0	0	0	0	0	0	No Change	None Treatment 5	
River	40	0	14	0	0	0	0	0	0	0	No Change	None Treatment 5	
Subtotal	104	0	31	0	0	+24	0	+1	0	0		c	
Axhandle	155	316	206	0	17	+113	+269	0	0	+17	5/16-10/15(c) 5/16-6/30 (s)	Chain/Seed Spray Reservoir Treatment 5	280 ac. 745 ac. 1 ea.
Denmark	0	2,900	141	0	0	0	+1,004	+18	0	0	No Change	Chain/Seed Spray Fence Well Trough Exclosure Treatment 2	460 ac. 360 ac. 2 mi. 1 ea. 1 ea. 1 (10 ac.)
Fayette Cattle	1,330	312	537	0	67	+570	+129	0	0	+67	6/1-9/30(c&s)	Chain/Seed Fence Spring Pipeline Treatment 5	255 ac. 7 mi. 1 ea. 1.5 mi.
Flat Canyon (Sanpete)	79	0	145	0	18	+30	0	+2	0	+18	No change	None Treatment 5	
Hop Creek	0	135	30	0	21	0	0	0	0	0	No Change	None Treatment 5	
Horse Ridge	0	198	97	0	0	0	+152	+13	0	0	No Change	Chain/Seed Treatment 4	400 ac.

(continued)

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Initial Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Change Between Current Use and Initial Vegetation Allocations (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk
Little Valley	476	0	184	0	0	332	0	184	0	0	-144	0	0	0	0
Maple Canyon	0	119	77	0	0	0	117	74	0	0	0	-2	-3	0	0
Middle Hollow	82	0	114	0	24	80	0	19	0	24	-2	0	-95	0	0
New Antelope	0	2,749	537	0	0	0	2,693	537	0	0	0	-56	0	0	0
New Elsinore	0	127	30	0	0	0	126	30	0	0	0	-1	0	0	0
New Lone Cedar	0	1,862	524	0	0	0	1,776	496	0	0	0	-86	-28	0	0
New Rough Canyon	0	555	288	0	0	0	338	184	0	0	0	-217	-104	0	0
Red Canyon	565	0	222	0	0	173	0	222	0	0	-392	0	0	0	0
Sanpitch (North)	0	184	16	0	0	0	80	16	0	0	0	-104	0	0	0
South Hollow	266	0	305	0	51	132	0	150	0	51	-134	0	-155	0	0
South Valley	0	2,045	298	0	0	0	1,307	227	0	0	0	-738	-71	0	0
Under-the-Rim	0	164	29	0	0	0	75	29	0	0	0	-89	0	0	0
Wood Hollow	0	213	254	0	33	0	45	69	0	33	0	-168	-185	0	0
4. No Livestock Grazing															
(No allotments included in this alternative.)															
Subtotal	3,006	10,892	4,094	0	157	1,568	8,864	3,360	0	129	-1,438	-2,028	-734	0	-28
GRAND TOTALS	9,039	18,943	15,460	120	1,726	9,899	21,212	12,874	120	1,664	+860	+2,269	-2,586	0	-62

[a]Grazing treatments are described in Chapter 2. The following shows the acreages and allotments in each treatment.

Treatment	1	2	3	4	Totals
1	13,466	0	5,123	0	18,589(5)
2	298,841	0	74,964	0	373,805(25)
3	0	0	599	0	599(1)
4	13,283	0	7,479	0	20,762(8)
5	51,971	1,809	32,437	0	86,217(20)
6	0	0	0	0	0

[b]Component 1 Range Developments

Chain/Seed	20,080.0 ac.
Plow/Seed	250.0 ac.
Spray 2,4-D sage	2,200.0 ac.
Burn	2,450.0 ac.
Burn/Seed	2,220.0 ac.
Seed	1,000.0 ac.
Contour/Seed	1,200.0 ac.
Pipeline	60.6 mi.
Reservoirs	14.0 ea.
Troughs	14.0 ea.
Springs	10.0 ea.
Raintraps	2.0 ea.
Stock trail	3.25 mi.
Fence	88.0 mi.
Exclosures	2.0 ea.

[c]Component 2 Range Developments
None

[d]Component 3 Range Developments

Chain/Seed	5,995.0 ac.
Spray 2,4-D sage	2,005.0 ac.
Seed/Browse (interseed)	1,075.0 ac.
Pipeline	5.0 mi.
Reservoirs	5.0 ea.
Trough	1.0 ea.
Springs	2.0 ea.
Stock trail	0.25 mi.
Fence	39.5 mi.
Exclosures	2.0 ea.
Well	1.0 ea.

Component Allotment	Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Change Between Initial and Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Alternative Season of Use	Grazing Treatments[a] and Range Developments	
Little Valley	770	0	356	0	0	+438	0	+172	0	0	No Change	Chain/Seed Spray Reservoirs Treatment 2	1,220 ac. 600 ac. 2 ea.
Maple Canyon	0	179	85	0	0	0	+62	+11	0	0	10/16-11/15(s) 5/1-5/31(s)	Spray Spring Treatment 5	300 ac. 1 ea.
Middle Hollow	95	0	27	0	24	+15	0	+8	0	0	5/21-7/10	Pipeline Treatment 5	1 mi.
New Antelope	0	2,957	537	0	95	0	+264	0	0	+95	10/16-5/31	Chain/Seed Pipeline Exclosure Treatment 2	160 ac. 2 mi. 1 (10 ac.)
New Elsinore	0	195	194	0	0	0	+69	+164	0	0	2/1-2/31	None Treatment 2	
New Lone Cedar	0	2,442	584	0	0	0	+666	+88	0	0	12/1-6/30	Chain/Seed Fence Treatment 2	1,540 ac. 7 mi.
New Rough Canyon	0	670	207	0	0	0	+332	+23	0	0	11/1-3/31	None Treatment 1	
Red Canyon	555	0	430	0	0	+382	0	+208	0	0	No Change	Chain/Seed Fence Reservoir Treatment 2	1,480 ac. 3 mi. 2 ea.
Sanpitch (North)	0	87	18	0	0	0	+7	+2	0	0	5/1-5/31 10/1-10/30	None Treatment 3	
South Hollow	249	0	305	0	51	+117	0	+155	0	0	5/16-6/30	Chain/Seed Fence Pipeline Stock trail Plant Browse Treatment 4	200 ac. 20.5 mi. 0.5 mi. 0.25 mi. 1,075 ac.
South Valley	0	1,336	261	0	0	0	+29	+34	0	0	No Change	None Treatment 5	
Under-the-Rim	0	75	29	0	0	0	0	0	0	0	No Change	None Treatment 5	
Wood Hollow	0	45	69	0	33	0	0	0	0	0	No Change	None Treatment 4	
Subtotal	3,233	11,847	4,258	0	326	+1,665	+2,983	+898	0	+197		d	
GRAND TOTALS	20,391	32,699	14,999	127	1,998	+10,492	+11,487	+2,125	+7	+334		e	

[e]Total Range Developments

Chain/Seed	26,075.0 ac.	(23 allotments)
Plow/Seed	250.0 ac.	(1 allotment)
Seed/Browse	1,075.0 ac.	(1 allotment)
Burn	2,450.0 ac.	(2 allotments)
Burn/Seed	2,220.0 ac.	(3 allotments)
Seed	1,000.0 ac.	(1 allotment)
Contour/Seed	1,200.0 ac.	(1 allotment)
Spray 2,4-D sage	4,205.0 ac.	(6 allotments)
Total	(38,475.0) ac.	
Pipeline	65.6 mi.	(16 allotments)
Reservoirs	19.0 ea.	(9 allotments)
Troughs	15.0 ea.	(4 allotments)
Springs	12.0 ea.	(8 allotments)
Raintraps	2.0 ea.	(2 allotments)
Stock trail	3.5 mi.	(3 allotments)
Fence	127.5 mi.	(16 allotments)
Exclosures	4.0 ea.	(4 allotments)
Wells	1.0 ea.	(1 allotment)

(continued)

TABLE C

Planning System Recommendation

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Initial Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Change Between Current Use and Initial Vegetation Allocations (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk
1. Allow Existing Level of Livestock Grazing to Increase															
Apple Spring	0	85	114	0	15	0	86	93	0	24	0	+1	-21	0	+9
Aurora	49	540	345	0	0	49	640	345	0	0	0	+100	0	0	0
Bear Valley	147	0	207	0	10	150	0	207	0	10	+3	0	0	0	0
Cedar Grove	110	1,063	60	37	114	324	1,665	60	37	114	+214	+602	0	0	0
Chicken Coop	17	249	216	2	62	126	254	216	2	62	+109	+5	0	0	0
East Piute	215	0	241	0	0	166	52	241	0	0	-49	+52	0	0	0
Gypsum	0	881	517	10	130	199	698	517	10	130	+199	-183	0	0	0
Hayes Canyon	0	449	190	0	0	0	483	190	0	0	0	+34	0	0	0
Hunt	0	35	21	0	0	0	52	21	0	0	0	+17	0	0	0
Hunter Spring	68	0	216	0	0	167	0	216	0	0	+99	0	0	0	0
Indian Hollow	0	42	76	0	16	0	179	76	0	16	0	+137	0	0	0
Jones	0	10	14	0	0	0	12	14	0	0	0	+2	0	0	0
Joseph	153	0	34	0	0	170	0	34	0	0	+17	0	0	0	0
Kingston Canyon	72	23	104	0	0	72	84	104	0	0	0	+61	0	0	0
New Dry Lake	81	60	689	0	5	376	0	689	0	5	+295	-60	0	0	0
New East Fork	109	0	258	0	0	142	0	258	0	0	+33	0	0	0	0
New Elbow	0	267	972	0	0	0	497	972	0	0	0	+230	0	0	0
New Fishlake	0	650	434	29	107	0	1,056	434	29	107	0	+406	0	0	0
New Gunnison	291	699	623	0	275	328	1,286	583	0	275	-63	+587	-40	0	0
New Marysvale	24	0	344	0	15	199	0	344	0	15	+175	0	0	0	0
New Monroe Co-op	0	820	469	0	5	0	883	469	0	5	0	+63	0	0	0
New Narrows	780	691	806	14	252	790	900	806	14	252	+10	+209	0	0	0

Component	Long-Term Vegetation Allocation (AUMs)					Change Between Initial and Long-Term Vegetation Allocation (AUMs)					Alternative	Grazing Treatments[a] and
	Livestock		Wildlife			Livestock		Wildlife				
Allotment	Cat.	Shp.	Deer	Antl.	Elk	Cat.	Shp.	Deer	Antl.	Elk.	Season of Use	Range Developments
Apple Spring	0	86	93	0	24	0	0	0	0	0	No Change	None Treatment 5
Aurora	53	705	381	0	0	+4	+65	+36	0	0	No Change	Chain/Seed 440 ac. Plow/Seed 250 ac. Pipeline 0.5 mi. Treatment 4
Bear Valley	335	0	207	0	10	+185	0	0	0	0	No Change	None Treatment 2
Cedar Grove	334	1,717	171	80	243	+10	+52	+111	+43	+129	No Change	Controlled Burn 500 ac. Fence 20 mi. Reservoirs 5 ea. Treatment 2
Chicken Coop	126	254	216	2	62	0	0	0	0	0	No Change	Chain/Seed 200 ac. Treatment 5
East Piute	166	52	332	0	0	0	0	+91	0	0	No Change	None Treatment 5
Gypsum	216	715	1,126	10	130	+17	+17	+609	0	0	5/1-5/31 (c) 11/1-5/31(s)	Chain/Seed 1,760 ac. Fence 5 mi. Spring 1 ea. Treatment 2
Hayes Canyon	0	551	198	0	0	0	+68	+8	0	0	No Change	Chain/Seed 240 ac. Spray 200 ac. Treatment 5
Hunt	0	52	26	0	0	0	0	+5	0	0	5/1-5/15	None Treatment 4
Hunter Spring	207	0	216	0	0	+40	0	0	0	0	10/1-12/31	Chain/Seed 500 ac. Fence 3.5 mi. Treatment 1
Indian Hollow	0	179	92	0	29	0	0	+16	0	+13	No Change	None Treatment 5
Jones	0	12	14	0	0	0	0	0	0	0	No Change	None Treatment 4
Joseph	237	0	38	0	0	+67	0	+4	0	0	2/1-3/31	None Treatment 1
Kingston Canyon	72	84	104	0	0	0	0	0	0	0	11/16-1/15(c) 10/1-10/10(s)	Chain/Seed 500 ac. Springs 3 ea. Treatment 1
New Dry Lake	546	0	762	0	0	+170	0	+73	0	0	10/1-2/28 5/21-6/30	Chain/Seed 1,400 ac. Spray 1,000 ac. Fence 16 mi. Spring 1 ea. Stock trail 3 mi. Exclosure 1 (10 ac.) Treatment 2
New East Fork	147	0	258	0	0	+5	0	0	0	0	10/1-12/31	None Treatment 2
New Elbow	0	647	1,313	0	0	0	+150	+341	0	0	11/1-2/25	Chain/Seed 1,500 ac. Fence 4.5 mi. Pipeline 18.5 mi. Treatment 2
New Fishlake	0	1,333	1,011	65	180	0	+277	+577	+36	+73	10/10-11/30 6/1-6/30	Burn/Seed 1,400 ac. Chain/Seed 700 ac. Pipeline 3 mi. Treatment 2
New Gunnison	217	2,219	896	0	275	-111	+933	+313	0	0	4/16-6/15(c) 10/1-10/30(s)	Chain/Seed 600 ac. Fence 4.5 mi. Stock trail 0.25 mi. Treatment 2
New Marysvale	199	0	344	0	15	0	0	0	0	0	5/1-7/15 Tate No Change Others	None Treatment 2
New Monroe Co-op	0	904	563	0	5	0	+21	+94	0	0	9/1-3/31 6/1-6/30	Chain/Seed 400 ac. Pipeline 10.5 mi. Reservoir 1 ea. Spring 1 ea. Trough 11 ea. Treatment 2
New Narrows	1,105	1,215	1,724	14	252	+315	+315	+918	0	0	9/1-5/31(c) 9/1-3/31(s)	Chain/Seed 5,320 ac. Fence 11.5 mi. Seed 1,000 ac. Pipeline 6 mi. Reservoirs 4 ea. Springs 2 ea. Treatment 2

(continued)

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Initial Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Change Between Current Use and Initial Vegetation Allocations (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk
New North Cove Mtn.	418	91	710	0	45	542	472	716	0	45	+124	+381	+6	0	0
New Otter Creek	1,289	196	687	25	210	1,363	484	687	25	210	+74	+288	0	0	0
New Pearson/ Lewis	56	0	414	0	20	237	0	414	0	20	+181	0	0	0	0
New Sand Ledges	371	0	345	3	89	517	0	345	3	89	+146	0	0	0	0
New Twist	532	44	86	0	0	526	57	86	0	0	-6	+13	0	0	0
Ogden	102	0	103	0	10	325	0	103	0	10	+223	0	0	0	0
Piute Oam	0	72	34	0	0	0	123	34	0	0	0	+51	0	0	0
Plateau	0	367	138	0	25	0	390	138	0	25	0	+23	0	0	0
Rock Canyon	262	0	212	0	0	388	0	212	0	0	+126	0	0	0	0
Rocky Ford	285	0	388	0	0	386	0	388	0	0	+101	0	0	0	0
Timber Canyon	0	588	623	0	127	0	724	623	0	127	0	+136	0	0	0
Uinta	0	109	13	0	7	0	130	13	0	7	0	+21	0	0	0
Wilson Oump	0	20	9	0	0	0	45	9	0	0	0	+25	0	0	0
Subtotal	5,531	8,051	10,712	120	1,539	7,542	11,252	10,657	120	1,548	+2,011	+3,201	-55	0	+9
2. Maintain Existing Level of Livestock Grazing															
Junction	350	0	414	0	0	350	0	414	0	0	0	0	0	0	0
Poulson	29	0	9	0	0	29	0	9	0	0	0	0	0	0	0
Rick's Pasture	11	0	9	0	0	11	0	9	0	0	0	0	0	0	0
River	40	0	14	0	0	40	0	14	0	0	0	0	0	0	0
Subtotal	430	0	446	0	0	430	0	446	0	0	0	0	0	0	0
3. Reduce Existing Level of Livestock Grazing															
Axhandle	118	44	206	0	28	42	47	206	0	0	-76	+3	0	0	-28
Oenmark	0	2,306	172	0	0	0	1,847	172	0	0	0	-459	0	0	0
Fayette Cattle	1,149	268	537	0	0	760	183	537	0	0	-389	-85	0	0	0

APPENDIX II-1, TABLE C (continued)

Component Allotment	Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Change Between Initial and Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Alternative Season of Use	Grazing Treatments[a] and Range Developments
New North Cove Mtn.	554	472	1,603	0	45	+12	0	+887	0	0	5/1-6/30(c&s) 10/1-10/25	Burn/Seed 600 ac. Chain/Seed 1,780 ac. Contour/Seed 1,200 ac Fence 6 mi. Exclosure 1 (10 ac.) Treatment 2
New Otter Creek	1,363	484	1,052	25	210	0	0	+365	0	0	9/1-5/31(c&s)	Chain/Seed 400 ac. Spring 4 ea. Pipeline 7 mi. Fence 4.5 mi. Reservoir 1 ea. Troughs 2 ea. Treatment 2
New Pearson/ Lewis	367	0	414	0	20	+130	0	0	0	0	5/15-7/31	Pipeline 1.5 mi. Treatment 2
New Sand Ledges	517	0	704	3	145	0	0	+359	0	+56	5/1-6/15	Chain/Seed 1,960 ac. Burn 750 ac. Raintrap 1 ea. Spring 1 ea. Fence 6 mi. Trail 1 mi. Treatment 2
New Twist	526	57	146	0	0	0	0	+60	0	0	12/1-4/30(c&s)	None Treatment 2
Ogden	325	0	103	0	10	0	0	0	0	0	No Change	None Treatment 5
Piute Dam	0	123	42	0	0	0	0	+8	0	0	12/1-2/28	Pipeline 0.1 mi. Treatment 1
Plateau	0	390	190	0	25	0	0	+52	0	0	No Change	Control burn 1,200 ac. Fence 1 mi. Treatment 5
Rock Canyon	520	0	411	0	0	+132	0	+199	0	0	5/1-8/31	Chain/Seed 640 ac. Fence 7 mi. Pipeline 2 mi. Raintraps 2 ea. Treatment 2
Rocky Ford	626	0	388	0	0	+240	0	0	0	0	No Change	Chain/Seed 1,200 ac. Spring 1 ea. Reservoir 1 ea. Treatment 2
Timber Canyon	0	976	623	0	127	0	+252	0	0	0	No Change	Chain/Seed 1,040 ac. Burn/Seed 220 ac. Treatment 5
Uinta	0	130	15	0	15	0	0	+2	0	+8	No Change	None Treatment 4
Wilson Dump	0	45	9	0	0	0	0	0	0	0	No Change	None Treatment 4
Subtotal	8,758	13,402	15,785	199	1,827	+1,216	+2,150	+5,128	+79	+279		b
Junction	350	0	474	0	0	0	0	+60	0	0	11/1-2/15	Spray 1,000 ac. Pipeline 7.5 mi. Treatment 2
Poulson	29	0	15	0	0	0	0	+6	0	0	No Change	None Treatment 2
Rick's Pasture	11	0	9	0	0	0	0	0	0	0	No Change	None Treatment 5
River	40	0	14	0	0	0	0	0	0	0	No Change	None Treatment 5
Subtotal	430	0	512	0	0	0	0	+66	0	0		c
Axhandle	192	288	206	0	28	+150	+241	0	0	+28	5/16-10/15(c) 5/16-6/30(s)	Chain/Seed 280 ac. Spray 745 ac. Reservoir 1 ea. Treatment 5
Denmark	0	2,011	190	0	0	0	+164	+18	0	0	No Change	Chain/Seed 460 ac. Spray 360 ac. Fence 2 mi. Pipeline 3 mi. Well 1 ea. Trough 1 ea. Exclosure 1 (10 ac.) Treatment 2
Fayette Cattle	1,330	312	537	0	67	+570	+129	0	0	+67	6/1-9/30(c&s)	Chain/Seed 255 ac. Fence 7 mi. Spring 1 ea. Pipeline 1.5 mi. Treatment 5

(continued)

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Initial Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Change Between Current Use and Initial Vegetation Allocations (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk
Flat Canyon (Sanpete)	350	0	145	0	0	49	0	145	0	0	-301	0	0	0	0
Hop Creek	0	151	30	0	21	0	94	30	0	21	0	-57	0	0	0
Horse Ridge	0	105	126	0	0	0	46	84	0	0	0	-59	-42	0	0
Little Valley	476	0	184	0	0	276	0	184	0	0	-200	0	0	0	0
Maple Canyon	0	119	77	0	0	0	117	74	0	0	0	-2	-3	0	0
Middle Hollow	82	0	114	0	24	40	0	27	0	24	-42	0	-87	0	0
New Antelope	0	2,749	537	0	0	0	2,635	537	0	0	0	-114	0	0	0
New Elsinore	0	127	30	0	0	0	126	30	0	0	0	-1	0	0	0
New Lone Cedar	0	1,862	524	0	0	0	1,753	519	0	0	0	-109	-5	0	0
New Rough Cyn.	0	555	288	0	0	0	323	199	0	0	0	-232	-89	0	0
North Hollow	72	0	208	0	30	40	0	62	0	30	-32	0	-146	0	0
Red Canyon	565	0	222	0	0	173	0	222	0	0	-392	0	0	0	0
Sanpitch (North)	0	184	16	0	0	0	80	16	0	0	0	-104	0	0	0
South Hollow	266	0	305	0	51	132	0	150	0	51	-134	0	-155	0	0
South Valley	0	2,045	298	0	0	0	1,307	227	0	0	-738	-71	0	0	0
Under-the-Rim	0	164	29	0	0	0	72	29	0	0	0	-92	0	0	0
Wood Hollow	0	213	254	0	33	0	45	69	0	33	0	-168	-185	0	0
Subtotal	3,078	10,892	4,302	0	187	1,512	8,675	3,519	0	159	-1,566	-2,217	-783	0	-28
4. No Livestock Grazing															
(No allotments included in this alternative.)															
GRAND TOTALS	9,039	18,943	15,460	120	1,726	9,484	19,927	14,622	120	1,707	+445	+984	-838	0	-19

[a]Grazing treatments are described in Chapter 2. The following shows the acreage and number of allotments for each treatment.

Treatments	1	2	3	4	Total
1	11,440(4)	0(0)	5,123(1)	0	16,563(5)
2	289,712(18)	9,729(2)	74,964(6)	0	374,405(26)
3	0(0)	0(0)	599(1)	0	599(1)
4	13,283(5)	0(0)	8,243(4)	0	21,526(9)
5	52,679(8)	1,209(2)	32,991(8)	0	86,879(18)
6	0	0	0	0	

[b]Component 1 Range Developments

Chain/Seed in PJ	20,380.0 ac
Plow/Seed in sage	250.0 ac.
Burn (sage)	2,450.0 ac.
Burn/Seed	2,220.0 ac.
Seed	1,000.0 ac.
Contour/Seed	1,200.0 ac.
Spray 2,4-D (sage)	1,200.0 ac.
Pipeline	49.1 mi.
Reservoirs	12.0 ea.
Springs	14.0 ea.
Raintraps	3.0 ea.
Troughs	13.0 ea.
Stock trail	4.25 mi.
Fence (including 6 mi. riparian and 2 mi. protection fence)	89.5 mi.
Exclosures	2 (10 ac.)

[c]Component 2 Range Developments

Spray 2,4-D (sage)	1,000.0 ac.
Pipeline	7.5 mi.

[d]Component 3 Range Developments

Chain/Seed	5,995.0 ac.
Seed/Browse	2,570.0 ac.
Spray 2,4-D (sage)	2,005.0 ac.
Pipeline	11.0 mi.
Reservoirs	5.0 ea.
Troughs	2.0 ea.
Springs	2.0 ea.
Raintraps	3.0 ea.
Well	1.0 ea.
Fence	26.5 mi.
Exclosures	2 (10 ac.)
Storage tank	1.0 ea.
Pump	1.0 ea.

Component	Long-Term Vegetation Allocation (AUMs)					Change Between Initial and Long-Term Vegetation Allocation (AUMs)					Alternative	Grazing Treatments[a] and
	Livestock		Wildlife			Livestock		Wildlife			Season of Use	Range Developments
Allotment	Cat.	Shp.	Deer	Antl.	Elk	Cat.	Shp.	Deer	Antl.	Elk.		
Flat Canyon (Sanpete)	79	0	145	0	18	+30	0	0	0	+18	No Change	None Treatment 5
Hop Creek	0	102	35	0	39	0	+8	+5	0	+18	No Change	None Treatment 5
Horse Ridge	0	162	126	0	0	0	+116	+42	0	0	No Change	Chain/Seed 400 ac. Treatment 4
Little Valley	640	0	356	0	0	+364	0	+172	0	0	No Change	Chain/Seed 1,220 ac. Spray 600 ac. Reservoirs 2 ea. Pipeline 3 mi. Trough 1 ea. Storage tank 1 ea. Pump 1 ea. Treatment 2
Maple Canyon	0	176	77	0	11	0	+59	+3	0	+11	No Change	Spray 300 ac. Spring 1 ea. Treatment 5
Middle Hollow	80	0	38	0	24	+40	0	+11	0	0	5/16-6/30	Browse seed 500 ac. Pipeline 1 mi. Raintrap 1 ea. Treatment 4
New Antelope	0	2,957	537	0	95	0	+322	0	0	+95	10/16-5/31	Chain 160 ac. Pipeline 2 mi. Exclosure 1 (10 ac.) Treatment 2
New Elsinore	0	126	36	0	0	0	0	+6	0	0	2/1-3/31	None Treatment 2
New Lone Cedar	0	2,419	748	0	0	0	+666	+229	0	0	12/1-6/30	Chain/Seed 1,540 ac. Fence 7 mi. Treatment 2
New Rough Cyn.	0	586	266	0	26	0	+263	+67	0	+26	11/1-3/31	None Treatment 1
North Hollow	72	0	56	0	30	+32	0	-6	0	0	5/16-6/30	Plant browse 995 ac. Treatment 5
Red Canyon	555	0	430	0	0	+382	0	+208	0	0	No Change	Chain/Seed 1,480 ac. Fence 3 mi. Reservoirs 2 ea. Raintrap 1 ea. Treatment 2
Sanpitch (North)	0	87	18	0	0	0	+7	+2	0	0	5/1-5/31 10/1-10/30	None Treatment 3
South Hollow	146	0	199	0	51	+14	0	+49	0	0	5/16-6/30	Plant browse 1,075 ac. Chain/Seed 200 ac. Fence 0.5 mi. Pipeline 0.5 mi. Raintrap 1 ea. Stock trail 0.25 mi. Treatment 4
South Valley	0	1,336	261	0	0	0	+29	+34	0	0	No Change	Fence 7 mi. Treatment 5
Under-the-Rim	0	72	29	0	0	0	0	0	0	0	No Change	None Treatment 5
Wood Hollow	0	45	69	0	33	0	0	0	0	0	No Change	None Treatment 4
Subtotal	3,094	10,679	4,359	0	422	+1,582	+2,004	+840	0	+263		d
GRAND TOTALS	12,282	24,081	20,656	199	2,249	+2,798	+4,154	+6,034	+79	+542		e

[e]Total Range Developments

Chain/Seed	26,375.0 ac.	(25 allotments)
Plow/Seed	250.0 ac.	(1 allotment)
Seed/Browse	2,570.0 ac.	(3 allotments)
Burn (sage)	2,450.0 ac.	(3 allotments)
Burn/Seed	2,220.0 ac.	(3 allotments)
Seed	1,000.0 ac.	(1 allotment)
Contour/Seed	1,200.0 ac.	(1 allotment)
Spray 2,4-D (sage)	4,205.0 ac.	(6 allotments)
Total	(40,270.0) ac.	
Pipelines	67.6 mi.	(16 allotments)
Reservoirs	17.0 ea.	(8 allotments)
Troughs	15.0 ea.	(4 allotments)
Springs	16.0 ea.	(10 allotments)
Raintraps	6.0 ea.	(6 allotments)
Well	1.0 ea.	(1 allotment)
Stock trail	4.25 mi.	(3 allotments)
Fence (including 6 mi. riparian and 2 mi. protection fence)	116.0 mi.	(17 allotments)
Exclosures	4 (10 ac.) ea.	(4 allotments)
Pump	1.0 ea.	(1 allotment)
Storage tank	1.0 ea.	(1 allotment

(continued)

TABLE D

Eliminate Livestock Grazing

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Current Vegetation Use (AUMs) Livestock Shp.	Current Vegetation Use (AUMs) Wildlife Deer	Current Vegetation Use (AUMs) Wildlife Antl.	Current Vegetation Use (AUMs) Wildlife Elk	Initial Vegetation Allocation (AUMs) Livestock	Initial Vegetation Allocation (AUMs) Wildlife Deer	Initial Vegetation Allocation (AUMs) Wildlife Antl.	Initial Vegetation Allocation (AUMs) Wildlife Elk.	Change Between Current Use and Initial Vegetation Allocations (AUMs) Livestock Cat.	Change Livestock Shp.	Change Wildlife Deer	Change Wildlife Antl.	Change Wildlife Elk
Angle Bench	375	0	207	0	15	0	422	0	185	-375	0	+215	0	+170
Antelope Valley	0	1,762	308	0	0	0	1,468	0	887	0	-1,762	+1,160	0	+887
Apple Spring	0	85	114	0	15	0	141	0	72	0	-85	+27	0	+57
Aurora	49	540	345	0	0	0	990	0	0	-49	-540	+645	0	0
Axhandle	118	44	206	0	28	0	298	0	52	-118	-44	+92	0	+24
Axtell	88	0	114	0	0	0	33	0	0	-88	0	-81	0	0
Bear Valley	147	0	207	0	10	0	282	0	85	-147	0	+75	0	+75
Box Creek	0	89	103	0	5	0	146	0	43	0	-89	+43	0	+38
Burrville	41	0	103	0	5	0	151	0	5	-41	0	+48	0	0
Canal	323	44	34	0	0	0	152	0	10	-323	-44	+118	0	+10
Cannon/Whittaker	Unallotted		172	0	0	0	176	0	0	0	0	+4	0	0
Cedar Grove	110	1,063	60	37	114	0	672	649	573	-110	-1,063	+612	+612	+459
Chicken Coop	17	249	216	2	62	0	414	22	191	-17	-249	+198	+20	+129
Deer Flat	Unallotted		207	0	10	0	248	0	20	0	0	+41	0	+10
Denmark	0	2,306	172	0	0	0	2,019	0	0	0	-2,306	+1,847	0	0
Dry Hill	Unallotted		49	0	0	0	27	0	0	0	0	-22	0	0
Dry Lake	81	0	310	0	0	0	353	0	20	-81	0	+43	0	+20
Dry Wash	177	0	22	6	34	0	76	28	98	-177	0	+54	+22	+64
Durkee	0	63	455	0	0	0	579	0	10	0	-63	+124	0	+10
East Bench	737	0	182	19	161	0	375	96	392	-737	0	+193	+77	+231
East Fork	109	0	86	0	0	0	146	0	0	-109	0	+60	0	0
East Piute	215	0	241	0	0	0	324	0	10	-215	0	+83	0	+10
Elbow	0	141	310	0	0	0	514	0	10	0	-141	+204	0	+10
Fayette Cattle	1,149	268	537	0	0	0	1,080	0	134	-1,149	-268	+543	0	+134
Fishlake	0	643	232	29	65	0	795	75	225	0	-643	+563	+46	+160
Flat Canyon (North Sevier)	0	93	26	0	0	0	99	0	0	0	-93	+73	0	0
Flat Canyon (Sanpete)	350	0	145	0	0	0	158	0	33	-350	0	+13	0	+33
Greenwich Creek	13	11	52	0	0	0	73	0	10	-13	-11	+21	0	+10
Gunnison Valley	0	634	458	0	275	0	1,035	0	1,517	0	-634	+577	0	+1,242
Gypsum	0	881	517	10	130	0	1,245	20	260	0	-881	+728	+10	+130
Hatch Canyon	0	37	65	0	18	0	93	0	36	0	-37	+28	0	+18
Hayes Canyon	0	449	190	0	0	0	681	0	0	0	-449	+491	0	0
Hodge Ranch	0	196	276	0	0	0	760	0	0	0	-196	+484	0	0
Hop Creek	0	151	30	0	21	0	108	0	68	0	-151	+78	0	+47
Horse Ridge	0	105	126	0	0	0	130	0	0	0	-105	+4	0	0
Hunt	0	35	21	0	0	0	73	0	0	0	-35	+52	0	0
Hunter Spring	68	0	216	0	0	0	299	0	0	-68	0	+83	0	0
Indian Hollow	0	42	76	0	16	0	263	0	72	0	-42	+187	0	+56
Jones	0	10	14	0	0	0	24	0	0	0	-10	+10	0	0
Joseph	153	0	34	0	0	0	68	0	0	-153	0	+34	0	0

APPENDIX II-1, TABLE D (continued)

Allotment	Long-Term Vegetation Allocation (AUMs) Wildlife Deer	Antl.	Elk	Change Between Initial and Long-Term Vegetation Allocation (AUMs) Wildlife Deer	Antl.	Elk.	Grazing Treatment[a] and Range Developments
Angle Bench	453	0	257	+31	0	+72	None Treatment 6
Antelope Valley	1,553	0	972	+85	0	+85	None
Apple Spring	131	0	72	-10	0	0	None Treatment 6
Aurora	1,086	0	53	+96	0	+53	None Treatment 6
Axhandle	288	0	52	-10	0	0	None Treatment 6
Axtell	56	0	0	+23	0	0	None Treatment 6
Bear Valley	374	0	167	+92	0	+82	None Treatment 6
Box Creek	171	0	68	+25	0	+25	None Treatment 6
Burrville	138	0	25	-13	0	+20	None Treatment 6
Canal	179	0	20	+27	0	+10	None Treatment 6
Cannon/Whittaker	177	0	0	+1	0	0	None Treatment 6
Cedar Grove	883	792	1,226	+211	+143	+653	None Treatment 6
Chicken Coop	414	22	191	0	0	0	None Treatment 6
Deer Flat	248	0	20	0	0	0	None Treatment 6
Denmark	2,926	0	0	+907	0	0	None Treatment 6
Dry Hill	27	0	0	0	0	0	None Treatment 6
Dry Lake	462	0	40	+109	0	+20	None Treatment 6
Dry Wash	76	28	98	0	0	0	None Treatment 6
Durkee	579	0	20	0	0	+10	None Treatment 6
East Bench	517	135	510	+142	+39	+118	None Treatment 6
East Fork	146	0	0	0	0	0	None Treatment 6
East Piute	413	0	20	+89	0	+10	None Treatment 6
Elbow	928	0	20	+414	0	+10	Chain and Seed 1,500 ac. Treatment 6
Fayette Cattle	1,181	0	732	+101	0	+598	None Treatment 6
Fishlake	1,857	277	988	+1,062	+202	+763	None Treatment 6
Flat Canyon (North Sevier)	150	0	0	+51	0	0	None Treatment 6
Flat Canyon (Sanpete)	158	0	33	0	0	0	None Treatment 6
Greenwich Creek	106	0	20	+33	0	+10	None Treatment 6
Gunnison Valley	1,529	0	2,429	+494	0	+912	None
Gypsum	1,709	54	478	+464	+34	+218	None Treatment 6
Hatch Canyon	119	0	54	+26	0	+18	None Treatment 6
Hayes Canyon	779	0	0	+98	0	0	None Treatment 6
Hodge Ranch	796	0	0	+36	0	0	None Treatment 6
Hop Creek	108	0	76	0	0	+8	None Treatment 6
Horse Ridge	295	0	0	+165	0	0	None Treatment 6
Hunt	79	0	0	+6	0	0	None Treatment 6
Hunter Spring	346	0	0	+47	0	0	None Treatment 6
Indian Hollow	286	0	110	+23	0	+38	None Treatment 6
Jones	24	0	0	0	0	0	None Treatment 6
Joseph	85	0	0	+17	0	0	None Treatment 6

(continued)

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Initial Vegetation Allocation (AUMs) Livestock	Wildlife Deer	Antl.	Elk.	Change Between Current Use and Initial Vegetation Allocations (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk
Junction	350	0	414	0	0	0	589	0	0	-350	0	+175	0	0
Kingston Canyon	72	23	104	0	0	0	202	0	0	-72	-23	+98	0	0
Koosharem Creek	0	40	207	0	15	0	253	0	15	0	-40	+46	0	0
Little Valley	476	0	184	0	0	0	521	0	0	-476	0	+337	0	0
Lone Cedar	0	798	363	0	0	0	1,278	0	0	0	-798	+915	0	0
Long Flat	0	987	229	0	0	0	999	0	32	0	-987	+770	0	+32
Lost Creek	66	0	129	3	14	0	142	3	14	-66	0	+13	0	0
Magleby	0	34	4	0	0	0	38	0	0	0	-34	+34	0	0
Manning Creek	0	60	379	0	5	0	448	0	5	0	-60	+69	0	0
Maple Canyon	0	119	77	0	0	0	121	0	62	0	-119	+44	0	+62
Marysvale	17	0	103	0	5	0	117	0	10	-17	0	+14	0	+5
Mayfield Cattle	210	0	35	0	0	0	67	0	25	-210	0	+32	0	+25
Middle Hollow	82	0	114	0	24	0	44	0	24	-82	0	-70	0	0
Monroe Coop	0	799	455	0	5	0	1,472	0	5	0	-799	+1,017	0	0
N. Cove Mtn.	418	0	448	0	40	0	994	0	40	-418	0	+546	0	0
North Hollow	72	0	208	0	30	0	84	0	60	-72	0	-124	0	+30
North Narrows	448	213	138	7	110	0	442	14	220	-448	-213	+304	+7	+110
Oak Spring	0	7	202	0	42	0	329	0	241	0	-7	+127	0	+199
Ogden	102	0	103	0	10	0	166	0	20	-102	0	+63	0	+10
P-Hill	Unallotted		276	0	20	0	294	0	40	0	0	+18	0	+20
Parson Mills	0	21	14	0	0	0	35	0	0	0	-21	+21	0	0
Pearson/Lewis	56	0	138	0	0	0	163	0	0	-56	0	+25	0	0
Piute Dam	0	72	34	0	0	0	157	0	0	0	-72	+123	0	0
Plateau	0	367	138	0	25	0	450	0	25	0	-367	+312	0	0
Poulson	29	0	9	0	0	0	15	0	0	-29	0	+6	0	0
Red Canyon	565	0	222	0	0	0	941	0	0	-565	0	+719	0	0
Rick's Pasture	11	0	9	0	0	0	11	0	0	-11	0	+2	0	0
River	40	0	14	0	0	0	46	0	0	-40	0	+32	0	0
Rock Canyon	262	0	212	0	0	0	481	0	0	-262	0	+269	0	0
Rocky Ford	285	0	388	0	0	0	465	0	0	-285	0	+77	0	0
Rough Canyon	0	555	239	0	0	0	438	0	52	0	-555	+199	0	+52
Salls Meadow	0	91	241	0	5	0	417	0	5	0	-91	+176	0	0
Sand Ledges	305	0	216	0	75	0	295	0	131	-305	0	+79	0	+56
Sanpitch North	0	184	16	0	0	0	80	0	0	0	-184	+64	0	0
Sanpitch South	0	65	5	0	0	0	27	0	0	0	-65	+22	0	0
South Hollow	266	0	305	0	51	0	198	0	51	266	0	-107	0	0
South Narrows	278	301	138	7	99	0	555	14	365	-278	-301	+417	+7	+266
South Valley	0	2,045	298	0	0	0	1,463	0	0	0	-2,045	+1,165	0	0
Swedes Canyon	0	334	77	0	0	0	505	0	0	0	-334	+428	0	0
Tate	7	0	34	0	0	0	56	0	10	-7	0	+22	0	+10

APPENOIX II-1, TABLE 0 (continued)

Allotment	Long-Term Vegetation Allocation (AUMs) Wildlife Deer	Antl.	Elk	Change Between Initial and Long-Term Vegetation Allocation (AUMs) Wildlife Deer	Antl.	Elk.	Grazing Treatment[a] and Range Oevelopments	
Junction	596	0	0	+7	0	0	None Treatment 6	
Kingston Canyon	202	0	0	0	0	0	None Treatment 6	
Koosharem Creek	372	0	30	+119	0	+15	None Treatment 6	
Little Valley	510	0	0	-11	0	0	None Treatment 6	
Lone Cedar	1,815	0	0	+537	0	0	None Treatment 6	
Long Flat	999	0	64	0	0	+32	None Treatment 6	
Lost Creek	143	3	14	+1	0	0	None Treatment 6	
Magleby	44	0	0	+6	0	0	None Treatment 6	
Manning Creek	769	0	40	+321	0	+35	None Treatment 6	
Maple Canyon	203	0	62	+82	0	0	None Treatment 6	
Marysvale	117	0	10	0	0	0	None Treatment 6	
Mayfield Cattle	139	0	50	+72	0	+25	None Treatment 6	
Middle Hollow	44	0	36	0	0	+12	Browse Seeding Treatment 6	500 ac.
Monroe Coop	1,853	0	10	+381	0	+5	None Treatment 6	
N. Cove Mtn.	1,916	0	80	+922	0	+40	Burn/Seed Chain & seed Treatment 6	600 ac. 1,780 ac.
North Hollow	227	0	117	+143	0	+57	Browse/Seed Treatment 6	995 ac.
North Narrows	1,086	28	532	+644	+14	+312	None Treatment 6	
Oak Spring	465	0	470	+136	0	+229	None Treatment 6	
Ogden	166	0	20	0	U	0	None Treatment 6	
P-Hill	298	0	50	+4	0	+10	None Treatment 6	
Parson Mills	56	0	0	+21	0	0	None Treatment 6	
Pearson/Lewis	183	0	0	+20	0	0	None Treatment 6	
Piute Dam	504	0	0	+347	0	0	None Treatment 6	
Plateau	462	0	50	+12	0	+25	None Treatment 6	
Poulson	21	0	0	+6	0	0	None Treatment 6	
Red Canyon	1,094	0	0	+153	0	0	None Treatment 6	
Rick's Pasture	12	0	0	+1	0	0	None Treatment 6	
River	54	0	0	+8	0	0	None Treatment 6	
Rock Canyon	525	0	0	+44	0	0	None Treatment 6	
Rocky Ford	596	0	0	+131	0	0	None Treatment 6	
Rough Canyon	569	0	382	+131	0	+330	None Treatment 6	
Salls Meadow	478	0	26	+61	0	+21	None Treatment 6	
Sand Ledges	322	0	131	+27	0	0	None Treatment 6	
Sanpitch North	87	0	0	+7	0	0	None Treatment 6	
Sanpitch South	48	0	0	+21	0	0	None Treatment 6	
South Hollow	329	0	175	+131	0	+124	Chain & Seed Browse/Seed Treatment 6	200 ac. 1,275 ac.
South Narrows	1,467	28	894	+912	+14	+529	None Treatment 6	
South Valley	1,597	0	0	+134	0	0	None Treatment 6	
Swedes Canyon	573	0	0	+68	0	0	None Treatment 6	
Tate	56	0	10	0	0	0	None Treatment 6	

(continued)

APPENOIX II-1, TABLE O (continued)

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Shp.	Wildlife Oeer	Antl.	Elk	Initial Vegetation Allocation (AUMs) Livestock	Wildlife Deer	Antl.	Elk.	Change Between Current Use and Initial Vegetation Allocations (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk
Ten Mile	0	63	207	0	0	0	356	0	0	0	-63	+149	0	0
Timber Canyon	0	588	623	0	127	0	902	0	563	0	-588	+279	0	+436
Twelve Mile	93	0	11	0	0	0	9	0	0	-93	0	-2	0	0
Twist	209	0	52	0	0	0	156	0	0	-209	0	+104	0	0
Uinta	0	109	13	0	7	0	192	0	46	0	-109	+179	0	+39
Under-the-Rim	0	164	29	0	0	0	104	0	0	0	-164	+75	0	0
Washburn	Unallotted		21	0	0	0	28	0	0	0	0	+7	0	0
West Side	0	730	84	0	0	0	501	0	0	0	-730	+417	0	0
Wilson Oump	0	20	9	0	0	0	45	0	0	0	-20	+36	0	0
Wood Hollow	0	213	254	0	33	0	99	0	48	0	-213	-155	0	+15
TOTAL	9,039	18,943	15,460	120	1,726	0	34,780	921	7,127	-9,039	-18,943	+19,320	+801	+5,401

[a]No grazing treatment for grazing livestock, all total allotment rest. All range developments are for big game habitat improvement.

[b]Total Range Oevelopments
Chain/Seed 3,480 ac (3 allotments)
Browse/Seed 2,770 ac. (3 allotments)
Burn/Seed 600 ac. (1 allotment
Total (6,850 ac.)

APPENDIX II-1, TABLE D (concluded)

Allotment	Long-Term Vegetation Allocation (AUMs) Wildlife Deer	Antl.	Elk	Change Between Initial and Long-Term Vegetation Allocation (AUMs) Wildlife Deer	Antl.	Elk.	Grazing Treatment[a] and Range Developments
Ten Mile	400	0	0	+44	0	0	None Treatment 6
Timber Canyon	1,020	0	748	+118	0	+185	None Treatment 6
Twelve Mile	10	0	0	+1	0	0	None Treatment 6
Twist	216	0	0	+60	0	0	None Treatment 6
Uinta	192	0	46	0	0	0	None Treatment 6
Under-the-Rim	104	0	0	0	0	0	None Treatment 6
Washburn	28	0	0	0	0	0	None Treatment 6
West Side	590	0	0	+89	0	0	None Treatment 6
Wilson Dump	45	0	0	0	0	0	None Treatment 6
Wood Hollow	99	0	48	0	0	0	None Treatment 6
GRAND TOTAL	45,533	1,367	12,846	+10,753	+446	+5,719	b

(continued)

TABLE E

Continuation of Present Management, or No Action

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Shp.	Wildlife[e] Deer	Antl.	Elk	Initial and Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Change in Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Grazing Treatments[a] and Range Developments[c]
1. Allow Existing Level of Livestock Grazing to Increase										
Antelope Valley	0	1,762	308	0	0	0	2,538	0	+776	Treatment 5
Apple Spring	0	85	114	0	15	0	190	0	+105	Treatment 5
Aurora	49	540	345	0	0	49	640	0	+100	Treatment 5
Axhandle	118	44	206	0	28	138	277	+20	+233	Treatment 5
Bear Valley	147	0	207	0	10	150	0	+3	0	Treatment 5
Box Creek	0	89	103	0	5	0	109	0	+20	Treatment 5
Burrville	41	0	103	0	5	48	0	+7	0	Treatment 5
Canal	323	44	34	0	0	317	57	-6	+13	Treatment 5
Cedar Grove	110	1,063	60	37	114	324	1,665	+214	+602	Treatment 5
Chicken Coop	17	249	216	2	62	129	260	+112	+11	Treatment 5
Denmark	0	2,306	172	0	0	0	2,898	0	+592	Treatment 5
Dry Lake	81	0	310	0	0	238	0	+157	0	Treatment 5
Ory Wash	177	0	22	6	34	216	0	+39	0	Treatment 5
Ourkee	0	63	455	0	0	0	134	0	+71	Treatment 1
East Bench	737	0	182	19	161	772	0	+35	0	Treatment 5
East Fork	109	0	86	0	0	120	0	+11	0	Treatment 5
East Piute	215	0	241	0	0	166	52	-49	+52	Treatment 5
Elbow	0	141	310	0	0	0	214	0	+73	Treatment 1
Fayette Cattle	1,149	268	537	0	0	1,615	472	+466	+204	Treatment 5
Fishlake	0	643	232	29	65	0	737	0	+94	Treatment 5
Greenwich Creek	13	11	52	0	0	13	20	0	+9	Treatment 5
Gunnison Valley	0	634	458	0	275	0	2,134	0	+1,500	Treatment 5
Gypsum	0	881	517	10	130	216	1,015	+216	+134	Treatment 5
Hatch Canyon	0	37	65	0	18	0	46	0	+9	Treatment 1
Hayes Canyon	0	449	190	0	0	0	551	0	+102	Treatment 5
Hodge Ranch	0	196	276	0	0	0	484	0	+288	Treatment 5
Hop Creek	0	151	30	0	21	0	240	0	+89	Treatment 5
Hunt	0	35	21	0	0	0	52	0	+17	Treatment 5
Hunter Spring	68	0	216	0	0	167	0	+99	0	Treatment 1
Indian Hollow	0	42	76	0	16	0	108	0	+66	Treatment 5
Jones	0	10	14	0	0	0	12	0	+2	Treatment 5
Joseph	153	0	34	0	0	170	0	+17	0	Treatment 5
Kingston Canyon	72	23	104	0	0	72	84	0	+61	Treatment 5
Koosharem Creek	0	40	207	0	15	0	46	0	+6	Treatment 1
Little Valley	476	0	184	0	0	590	0	+114	0	Treatment 5
Lone Cedar	0	798	363	0	0	0	1,310	0	+512	Treatment 5
Long Flat	0	987	229	0	0	0	1,149	0	+162	Treatment 5
Manning Creek	0	60	379	0	5	138	0	+138	-60	Treatment 1

APPENOIX II-1, TABLE E (continued)

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Shp.	Wildlife[a] Oeer	Antl.	Elk	Initial and Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Change in Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Grazing Treatments[a] and Range Developments[c]
Maple Canyon	0	119	77	0	0	0	135	0	+16	Treatment 5
Marysvale	17	0	103	0	5	52	0	+35	0	Treatment 5
Mayfield Cattle	210	0	35	0	0	211	0	+1	0	Treatment 5
Monroe Coop	0	799	455	0	5	0	1,017	0	+218	Treatment 2
North Cove Mtn.	418	0	448	0	40	540	296	+122	+296	Treatment 5
North Narrows	448	213	138	7	110	448	254	0	+41	Treatment 5
Oak Spring	0	7	202	0	42	0	319	0	+312	Treatment 5
Ogden	102	0	103	0	10	350	0	+248	0	Treatment 5
Pearson-Lewis	56	0	138	0	0	127	0	+71	0	Treatment 5
Piute Dam	0	72	34	0	0	0	123	0	+51	Treatment 1
Plateau	0	367	138	0	25	0	390	0	+23	Treatment 5
Red Canyon	565	0	222	0	0	702	0	+137	0	Treatment 5
River	40	0	14	0	0	56	0	+16	0	Treatment 5
Rock Canyon	262	0	212	0	0	1,200	0	+938	0	Treatment 5
Rocky Ford	285	0	388	0	0	386	0	+101	0	Treatment 5
Rough Canyon	0	555	239	0	0	0	591	0	+36	Treatment 1
Sall's Meadow	0	91	241	0	5	0	176	0	+85	Treatment 5
Sand Ledges	305	0	216	0	75	451	0	+146	0	Treatment 5
Sanpitch (North)	0	184	16	0	0	0	240	0	+56	Treatment 5
Sanpitch (South)	0	65	5	0	0	0	85	0	+20	Treatment 5
South Hollow	266	0	305	0	51	292	0	+26	0	Treatment 5
South Narrows	278	301	138	7	99	281	425	+3	+124	Treatment 5
South Valley	0	2,045	298	0	0	0	2,777	0	+732	Treatment 5
Swedes Canyon	0	334	77	0	0	0	396	0	+62	Treatment 1
Tate	7	0	34	0	0	20	0	+13	0	Treatment 5
Ten Mile	0	63	207	0	0	0	149	0	+86	Treatment 1
Twelve Mile	93	0	11	0	0	99	0	+6	0	Treatment 5
Under-the-Rim	0	164	29	0	0	0	286	0	+122	Treatment 5
West Side	0	730	84	0	0	0	839	0	+109	Treatment 5
Wilson Oump	0	20	9	0	0	0	45	0	+25	Treatment 5
Subtotal	7,407	17,780	12,274	117	1,446	10,863	26,037	+3,456	+8,257	
2. Maintain Existing Level of Livestock Grazing										
Angle Bench	375	0	207	0	15	375	0	0	0	Treatment 5
Axtell	88	0	114	0	0	88	0	0	0	Treatment 5
Flat Canyon (Sanpete)	350	0	145	0	0	350	0	0	0	Treatment 5
Horse Ridge	0	105	126	0	0	0	105	0	0	Treatment 5
Junction	350	0	414	0	0	350	0	0	0	Treatment 5
Lost Creek	66	0	129	3	14	66	0	0	0	Treatment 5
Magleby	0	34	4	0	0	0	34	0	0	Treatment 1
Middle Hollow	82	0	114	0	24	82	0	0	0	Treatment 5

(continued)

APPENDIX II-1, TABLE E (concluded)

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Livestock Shp.	Wildlife[a] Deer	Wildlife[a] Antl.	Wildlife[a] Elk	Initial and Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Livestock Shp.	Change in Vegetation Allocation (AUMs) Livestock Cat.	Livestock Shp.	Grazing Treatments[a] and Range Developments[c]
North Hollow	72	0	208	0	30	72	0	0	0	Treatment 5
Parson Mills	0	21	14	0	0	0	21	0	0	Treatment 1
Poulson	29	0	9	0	0	29	0	0	0	Treatment 5
Rick's Pasture	11	0	9	0	0	11	0	0	0	Treatment 5
Timber Canyon	0	588	623	0	127	0	588	0	0	Treatment 5
Twist	209	0	52	0	0	209	0	0	0	Treatment 5
Uinta	0	109	13	0	7	0	109	0	0	Treatment 5
Wood Hollow	0	213	254	0	33	0	213	0	0	Treatment 5
Subtotal	1,632	1,070	2,435	3	250	1,632	1,070	0	0	
3. Reduce Existing Level of Livestock Grazing										
Flat Canyon (North Sevier)	0	93	26	0	0	0	92	0	-1	Treatment 5
Subtotal	0	93	26	0	0	0	92	0	-1	
4. No Livestock Grazing										
Cannon-Whitaker	0	0	172	0	0	0	0	0	0	Treatment 6
Oeer Flat	0	0	207	0	10	0	0	0	0	Treatment 6
Dry Hill	0	0	49	0	0	0	0	0	0	Treatment 6
P-Hill	0	0	276	0	20	0	0	0	0	Treatment 6
Washburn	0	0	21	0	0	0	0	0	0	Treatment 6
Subtotal	0	0	725	0	30	0	0	0	0	
GRAND TOTAL	9,039	18,943	15,460	120	1,726	12,495	27,199	+3,456	+8,256	

[a]The wildlife allocation would not change from the current vegetation use.

[b]Oescription of grazing treatments are in Chapter 2.

Grazing Treatment	Component Acres and Number of Allotments 1	2	3	4	Total
1	37,838(10)	1,795(2)	0	0	39,633(12)
2	24,202(1)	0	0	0	24,202(1)
3	0	0	0	0	0
4	0	0	0	0	0
5	376,582(57)	52,095(14)	2,339(1)	0	431,016(72)
6	0	0	0	5,121(5)	5,121(5)
Total	438,622(68)	53,890(16)	2,339(1)	5,121(5)	499,972(90)

[c]In this alternative, it is assumed that there would be no range developments and seasons of use would remain essentially the same.

(continued)

APPENDIX II-1 (continued)

TABLE F

Adjust Spring Livestock Use

Component	Current Vegetation Use (AUMs)					Initial Vegetation Allocation (AUMs)					Change Between Current Use and Initial Vegetation Allocations (AUMs)				
	Livestock		Wildlife			Livestock		Wildlife			Livestock		Wildlife		
Allotment	Cat.	Shp.	Deer	Antl.	Elk	Cat.	Shp.	Deer	Antl.	Elk.	Cat.	Shp.	Deer	Antl.	Elk
1. Allow Existing Level of Livestock Grazing to Increase															
Aurora	49	540	345	0	0	49	640	345	0	0	0	+100	0	0	0
Cannon-Whittaker	0	0	172	0	0	22	0	172	0	0	+22	0	0	0	0
Deer Flat	0	0	207	0	10	50	0	207	0	10	+50	0	0	0	0
Dry Hill	0	0	49	0	0	10	0	49	0	0	+10	0	0	0	0
Marysvale	17	0	103	0	5	77	0	103	0	5	+60	0	0	0	0
P Hill	0	0	276	0	20	55	0	276	0	20	+55	0	0	0	0
Washburn	0	0	21	0	0	6	0	21	0	0	+6	0	0	0	0
Subtotal	66	540	1,173	0	35	269	640	1,173	0	35	+203	+100	0	0	0
2. Maintain Existing Level of Livestock Grazing															
Antelope Valley	0	1,762	308	0	0	0	1,762	308	0	0	0	0	0	0	0
Apple Spring	0	85	114	0	15	0	85	114	0	15	0	0	0	0	0
Chicken Coop	17	249	216	2	62	17	249	216	2	62	0	0	0	0	0
Durkee	0	63	455	0	0	0	63	455	0	0	0	0	0	0	0
Elbow	0	141	310	0	0	0	141	310	0	0	0	0	0	0	0
Fayette Cattle	1,149	268	537	0	0	1,149	268	537	0	0	0	0	0	0	0
Flat Canyon (North Sevier)	0	93	26	0	0	0	93	26	0	0	0	0	0	0	0
Flat Canyon (Sanpete)	350	0	145	0	0	350	0	145	0	0	0	0	0	0	0
Gypsum	0	881	517	10	130	0	881	517	10	130	0	0	0	0	0
Hayes Canyon	0	449	190	0	0	0	449	190	0	0	0	0	0	0	0
Jones	0	10	14	0	0	0	10	14	0	0	0	0	0	0	0
Little Valley	476	0	184	0	0	476	0	184	0	0	0	0	0	0	0
Lone Cedar	0	798	363	0	0	0	798	363	0	0	0	0	0	0	0
Long Flat	0	987	229	0	0	0	987	229	0	0	0	0	0	0	0
Magleby	0	34	4	0	0	0	34	4	0	0	0	0	0	0	0
Middle Hollow	82	0	114	0	24	82	0	114	0	24	0	0	0	0	0
N. Cove Mtn.	418	0	448	0	40	418	0	448	0	40	0	0	0	0	0
North Hollow	72	0	208	0	30	72	0	208	0	30	0	0	0	0	0
Parson Mills	0	21	14	0	0	0	21	14	0	0	0	0	0	0	0
Plateau	0	367	138	0	25	0	367	138	0	25	0	0	0	0	0
Red Canyon	565	0	222	0	0	565	0	222	0	0	0	0	0	0	0
Rough Canyon	0	555	239	0	0	0	555	239	0	0	0	0	0	0	0
Swedes Canyon	0	334	77	0	0	0	334	77	0	0	0	0	0	0	0

APPENDIX II-1, TABLE F (continued)

Component Allotment	Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Change Between Initial and Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Alternative Season of Use	Grazing Treatments[a] and Range Developments	
Aurora	49	640	447	0	0	0	0	+102	0	0	No change	Treatment 3	
Cannon-Whittaker	27	0	172	0	0	+5	0	0	0	0	9/15-10/15	Treatment 1	
Deer Flat	102	0	207	0	10	+52	0	0	0	0	5/15-6/15	Treatment 3	
Dry Hill	10	0	49	0	0	0	0	0	0	0	6/1-6/30	Treatment 3	
Marysvale	77	0	103	0	5	0	0	0	0	0	5/10-7/15	Treatment 3	
P. Hill	142	0	276	0	20	+87	0	0	0	0	9/15-10/15	Treatment 1	
Washburn	10	0	27	0	0	+4	0	+6	0	0	9/15-10/15	Contour/seed Treatment 1	200 ac.
Subtotal	417	640	1,281	0	35	+148	0	+108	0	0		b	
Antelope Valley	0	2,135	308	0	63	0	+373	0	0	+63	No change	Treatment 1	
Apple Spring	0	85	114	0	15	0	0	0	0	0	No change	Treatment 3	
Chicken Coop	129	260	216	2	62	+112	+11	0	0	0	No change	Treatment 3	
Durkee	0	275	455	0	0	0	+212	0	0	0	9/15-10/15	Treatment 1	
Elbow	0	341	607	0	0	0	+200	+297	0	0	No change	Contour/seed Gully plugs Treatment 1	600 ac. 20 ea.
Fayette Cattle	1,298	312	537	0	67	+149	+44	0	0	+67	No change	Treatment 3	
Flat Canyon (North Sevier)	0	155	26	0	0	0	+62	0	0	0	No change	Treatment 3	
Flat Canyon (Sanpete)	350	0	145	0	18	0	0	0	0	+18	No change	Treatment 3	
Gypsum	0	931	808	10	130	0	+50	+291	0	0	No change	Contour/seed Gully plugs Treatment 3	600 ac.
Hayes Canyon	0	449	232	0	0	0	0	+42	0	0	No change	Treatment 3	
Jones	0	11	15	0	0	0	+1	+1	0	0	No change	Treatment 3	
Little Valley	770	0	356	0	0	+294	0	+172	0	0	No change	Chain/Seed Spray Reservoir Treatment 3	1,220 ac. 600 ac. 2 ea.
Lone Cedar	0	1,203	412	0	0	0	+405	+49	0	0	No change	Treatment 3	
Long Flat	0	987	229	0	0	0	0	0	0	0	No change	Treatment 3	
Magleby	0	40	4	0	0	0	+6	0	0	0	No change	Treatment 1	
Middle Hollow	95	0	25	0	36	+13	0	-89	0	+12	No change	Pipelines Treatment 3	1 mi.
N. Cove Mtn.	709	0	1,348	0	40	+291	0	+900	0	0	6/1-6/30 10/1-10/25	Treatment 3	
North Hollow	90	0	52	0	30	+18	0	-156	0	0	10/1-11/1	Browse planting Treatment 1	200 ac.
Parson Mills	0	35	21	0	0	0	+14	+7	0	0	No change	Treatment 1	
Plateau	0	378	150	0	25	0	+11	+12	0	0	No change	Treatment 3	
Red Canyon	565	0	430	0	0	0	0	+208	0	0	No change	Chain/Seed Fence Reservoirs Treatment 3	1,480 ac. 3 mi. 2 ea.
Rough Canyon	0	570	239	0	26	0	+15	0	0	+26	No change	Spray/seed Treatment 1	400 ac.
Swedes Canyon	0	396	117	0	0	0	+62	+40	0	0	No change	Treatment 3	

(continued)

Component Allotment	Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Change Between Initial and Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Alternative Season of Use	Grazing Treatments[a] and Range Developments	
Hunter Spring	260	0	216	0	0	+206	0	0	0	0	10/1-11/15 4/15-4/30	Chain/Seed Fence Treatment 3	500 ac. 3.5 mi.
Indian Hollow	0	200	92	0	29	0	+165	+16	0	+13	10/1-11/15 5/20-6/15	Treatment 3	
Joseph	237	0	85	0	0	+160	0	+51	0	0	5/5-5/31	Treatment 3	
Junction	370	0	464	0	0	+70	0	+50	0	0	11/1-1/15 5/15-5/31	Spray Pipeline Treatment 3	1,000 ac. 7.5 mi.
Kingston Canyon	72	84	104	0	0	0	+66	0	0	0	11/16-1/15 c 10/1-10/10 s 6/5-6/10 s	Treatment 3	
Lost Creek	66	0	129	3	14	+33	0	0	0	0	5/15-5/31	Treatment 3	
Manning Creek	820	0	379	0	5	+751	0	0	0	0	7/1-9/30 5/15-6/9	Chain/Seed Contour/seed Fence Gully plugs Treatment 3	700 ac. 800 ac 16 mi. 20 ea.
Maple Canyon	0	116	77	0	11	0	+9	0	0	+11	10/1-4/15	Treatment 3	
Mayfield Cattle	130	0	40	0	29	+38	0	+5	0	+29	12/1-2/15 4/1-5/31	Treatment 3	
Monroe Coop	0	1,017	751	0	5	0	+312	+296	0	0	9/15-4/31	Treatment 3	
North Narrows	1,448	388	590	7	110	+1,075	+175	+452	0	0	12/1-4/30 c 2/6-3/31 s	Chain/Seed Plow/Seed Fence Reservoirs Treatment 3	2,500 ac. 500 ac. 3 mi. 2 ea.
Oak Spring	0	798	216	0	42	0	+794	+14	0	0	10/6-10/15 6/15-6/30	Chain/Seed Pipeline Reservoir Treatment 3	700 ac. 1.5 mi. 1 ea.
Ogden	162	0	136	0	10	+101	10	+33	0	0	6/1-7/15	Treatment 3	
Pearson-Lewis	225	0	138	0	0	+176	0	0	0	0	6/15-10/5	Treatment 3	
Poulson	29	0	14	0	0	+14	0	+5	0	0	5/5-5/20	Treatment 3	
Rick's Pasture	11	0	9	0	0	+2	0	0	0	0	6/1-9/30	Treatment 3	
River	40	0	14	0	0	+9	0	0	0	0	5/15-10/15	Treatment 3	
Rock Canyon	520	0	411	0	0	+307	0	+199	0	0	3/1-3/30 5/15-10/31	Chain/Seed Fence Pipeline Rain Traps Treatment 3	640 ac. 7 mi. 2 mi. 2 ea.
Rocky Ford	1,280	0	388	0	0	+1,090	0	0	0	0	3/1-4/28	Chain/Seed Spring Reservoir Treatment 3	1,200 ac. 1 ea 1 ea.
Sand Ledges	418	0	248	0	87	+265	0	+32	0	+12	6/1-6/30	Treatment 3	
Sanpitch North	0	169	16	0	0	0	0	0	0	0	11/16-2/28 6/5-6/30	Treatment 3	
Sanpitch South	0	65	5	0	0	0	+5	0	0	0	11/16-2/28 6/5-6/30	Treatment 3	
South Hollow	190	0	185	0	51	+57	0	+44	0	0	6/1-6/25	Chain/Seed Fence Pipeline Stock Trail Treatment 3	200 ac. 0.5 mi 0.5 mi 0.25 mi.
South Narrows	960	1,151	467	7	84	+682	+1,000	+329	0	0	12/1-3/10 c 6/5-6/30 s	Chain/Seed Plow/Seed Fence Spring Reservoirs Treatment 3	2,000 ac. 500 ac. 5 mi. 2 ea. 2 ea.
South Valley	0	2,045	298	0	0	0	+511	0	0	0	12/1-4/30	Treatment 3	
Twelve Mile	93	0	11	0	0	+46	0	0	0	0	5/15-6/15	Treatment 3	
Wilson Dump	0	28	27	0	0	0	+18	+18	0	0	5/15-5/25	Treatment 3	
Subtotal	11,641	17,534	10,538	187	1,430	+7,696	+10,006	+3,496	+79	+285		d	

(continued)

APPENDIX II-1, TABLE F (continued)

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Initial Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Change Between Current Use and Initial Vegetation Allocations (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk
Hunter Spring	68	0	216	0	0	54	0	216	0	0	-14	0	0	0	0
Indian Hollow	0	42	76	0	16	0	35	76	0	16	0	-7	0	0	0
Joseph	153	0	34	0	0	77	0	34	0	0	-76	0	0	0	0
Junction	350	0	414	0	0	300	0	414	0	0	-50	0	0	0	0
Kingston Canyon	72	23	104	0	0	72	18	104	0	0	0	-5	0	0	0
Lost Creek	66	0	129	3	14	33	0	129	3	14	-33	0	0	0	0
Manning Creek	0	60	379	0	5	69	0	379	0	5	+69	-60	0	0	0
Maple Canyon	0	119	77	0	0	0	107	77	0	0	0	-12	0	0	0
Mayfield Cattle	210	0	35	0	0	92	0	35	0	0	-118	0	0	0	0
Monroe Coop	0	799	455	0	5	0	705	455	0	5	0	-94	0	0	0
North Narrows	448	213	138	7	110	373	213	138	7	110	-75	0	0	0	0
Oak Spring	0	7	202	0	42	0	4	202	0	42	0	-3	0	0	0
Ogden	102	0	103	0	10	61	0	103	0	10	-41	0	0	0	0
Pearson-Lewis	56	0	138	0	0	49	0	138	0	0	-7	0	0	0	0
Poulson	29	0	9	0	0	15	0	9	0	0	-14	0	0	0	0
Rick's Pasture	11	0	9	0	0	9	0	9	0	0	-2	0	0	0	0
River	40	0	14	0	0	31	0	14	0	0	-9	0	0	0	0
Rock Canyon	262	0	212	0	0	213	0	212	0	0	-49	0	0	0	0
Rocky Ford	285	0	388	0	0	190	0	388	0	0	-95	0	0	0	0
Sand Ledges	305	0	216	0	75	153	0	216	0	75	-152	0	0	0	0
Sanpitch North	0	184	16	0	0	0	169	16	0	0	0	-15	0	0	0
Sanpitch South	0	65	5	0	0	0	60	5	0	0	0	-5	0	0	0
South Hollow	266	0	305	0	51	133	0	141	0	51	-133	0	-164	0	0
South Narrows	278	301	138	7	99	278	151	138	7	84	0	-150	0	0	-15
South Valley	0	2,045	298	0	0	0	1,534	298	0	0	0	-511	0	0	0
Twelve Mile	93	0	11	0	0	47	0	11	0	0	-46	0	0	0	0
Wilson Dump	0	20	9	0	0	0	10	9	0	0	0	-10	0	0	0
Subtotal	5,527	9,188	7,206	108	1,160	3,945	7,528	7,042	108	1,145	-1,582	-1,660	-164	0	-15

APPENDIX II-1, TABLE F (continued)

Component Allotment	Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Change Between Initial and Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Alternative Season of Use	Grazing Treatments[a] and Range Developments	
Tate	20	0	34	0	0	+13	0	0	0	0	No change	Treatment 3	
Ten Mile	0	149	251	0	0	0	+86	+44	0	0	No change	Treatment 1	
Timber Canyon	0	742	623	0	127	0	+154	0	0	0	No change	Treatment 3	
Twist	275	0	79	0	0	+66	0	+27	0	0	5/15-6/10	Treatment 3	
Uinta	0	138	88	0	46	0	+29	+75	0	+39	No change	Treatment 3	
Under-the-Rim	0	164	29	0	0	0	0	0	0	0	No change	Treatment 3	
West Side	0	730	163	0	0	0	0	+79	0	0	No change	Treatment 3	
Wood Hollow	0	213	254	0	49	0	0	0	0	16	No change	Treatment 3	
Subtotal	4,301	10,699	8,367	12	734	956	1,735	1,999	0	241		c	
Angle Bench	485	0	332	0	15	+250	0	+125	0	0	12/1-12/31 4/15-5/31	Chain/seed Treatment 3	500 ac.
Axhandle	91	119	206	0	28	+17	+60	0	0	0	6/1-10/15 c 6/1-6/30 s	Treatment 3	
Bear Valley	335	0	207	0	10	+207	0	0	0	0	6/10-10/15	Treatment 3	
Box Creek	0	115	145	0	5	0	+70	+42	0	0	5/1-5/31	Treatment 3	
Burrville	41	0	135	0	5	+10	0	+32	0	0	6/15-7/30	Treatment 3	
Canal	365	80	34	0	0	+72	+42	0	0	0	12/1-4/15 c 10/15-12/10 s 4/1-4/15 s	Treatment 3	
Cedar Grove	1,014	3,594	171	80	243	+959	+2,514	+111	+43	+129	5/20-6/30 c 5/15-6/30 s 10/6-1/15 s	Control burn Fence Reservoirs Treatment 3	500 ac. 20 mi. 5 ea.
Denmark	0	2,397	529	0	0	0	+550	+357	0	0	No change	Treatment 3	
Dry Lake	338	0	436	0	0	+297	0	+126	0	0	6/10-6/30	Chain/Seed Spray Stock trail Exclosure Treatment 3	700 ac. 1,000 ac. 3 mi. 1 (10 ac.)
Dry Wash	188	0	36	6	34	+99	0	+14	0	0	5/21-6/20	Contour/seed Pipeline Trough Treatment 3	500 ac. 1 mi. 2 ea.
East Bench	1,165	0	226	19	161	+596	0	+44	0	0	10/15-12/31 5/10-5/31	Contour/seed Fence Springs Pipeline Reservoir Treatment 3	500 ac. 3.5 mi. 2 ea. 3 mi. 1 ea
East Fork	120	0	86	0	0	+20	0	0	0	0	5/15-7/31	Treatment 3	
East Piute	168	52	332	0	0	+87	0	+91	0	0	5/10-6/10 c 11/1-2/15 s	Fence Chain/Seed Treatment 3	1.5 mi. 500 ac.
Fishlake	0	2,124	795	65	138	0	+1,529	+563	+36	+73	10/10-11/25 6/15-7/15	Burn Pipeline Treatment 3	1,400 ac. 1.5 mi.
Gunnison Valley	0	2,251	699	0	275	0	+1,774	+241	0	0	10/1-10/15 5/25-6/15	Chain/Seed Fence Contour/seed Gully plugs Treatment 3	600 ac. 4.5 mi. 2,300 ac. 200 ea.
Hodge Ranch	0	484	462	0	0	0	+347	+186	0	0	9/16-10/15 6/5-6/30	Chain/Seed Pipeline Springs Treatment 3	400 ac. 3 mi. 2 ea.
Hop Creek	0	120	35	0	39	0	+7	+5	0	+18	10/1-11/30 6/1-6/30	Treatment 3	
Horse Ridge	0	105	126	0	0	0	+52	0	0	0	6/15-6/30	Treatment 3	
Hunt	0	32	36	0	0	0	+6	+15	0	0	10/1-11/30 4/1-4/30	Treatment 3	

(continued)

Component	Current Vegetation Use (AUMs)					Initial Vegetation Allocation (AUMs)					Change Between Current Use and Initial Vegetation Allocations (AUMs)				
	Livestock		Wildlife			Livestock		Wildlife			Livestock		Wildlife		
Allotment	Cat.	Shp.	Deer	Antl.	Elk	Cat.	Shp.	Deer	Antl.	Elk.	Cat.	Shp.	Deer	Antl.	Elk
Tate	7	0	34	0	0	7	0	34	0	0	0	0	0	0	0
Ten Mile	0	63	207	0	0	0	63	207	0	0	0	0	0	0	0
Timber Canyon	0	588	623	0	127	0	588	623	0	127	0	0	0	0	0
Twist	209	0	52	0	0	209	0	52	0	0	0	0	0	0	0
Uinta	0	109	13	0	7	0	109	13	0	7	0	0	0	0	0
Under-the-Rim	0	164	29	0	0	0	164	29	0	0	0	0	0	0	0
West Side	0	730	84	0	0	0	730	84	0	0	0	0	0	0	0
Wood Hollow	0	213	254	0	33	0	213	254	0	33	0	0	0	0	0
Subtotal	3,345	8,964	6,368	12	493	3,345	8,964	6,368	12	493	0	0	0	0	0
3. <u>Reduce Existing Level of Livestock Grazing</u>															
Angle Bench	375	0	207	0	15	235	0	207	0	15	-140	0	0	0	0
Axhandle	118	44	206	0	28	74	59	206	0	28	-44	+15	0	0	0
Bear Valley	147	0	207	0	10	128	0	207	0	10	-19	0	0	0	0
Box Creek	0	89	103	0	5	0	45	103	0	5	0	-44	0	0	0
Burrville	41	0	103	0	5	31	0	103	0	5	-10	0	0	0	0
Canal	323	44	34	0	0	293	38	34	0	0	-30	-6	0	0	0
Cedar Grove	110	1,063	60	37	114	55	1,080	60	37	114	-55	+17	0	0	0
Oenmark	0	2,306	172	0	0	0	1,847	172	0	0	0	-459	0	0	0
Ory Lake	81	0	310	0	0	41	0	310	0	0	-40	0	0	0	0
Ory Wash	177	0	22	6	34	89	0	22	6	34	-88	0	0	0	0
East Bench	737	0	182	19	161	569	0	182	19	161	-168	0	0	0	0
East Fork	109	0	86	0	0	100	0	86	0	0	-9	0	0	0	0
East Piute	215	0	241	0	0	81	52	241	0	0	-134	+52	0	0	0
Fishlake	0	643	232	29	65	0	595	232	29	65	0	-48	0	0	0
Gunnison Valley	0	634	458	0	275	0	477	458	0	275	0	-157	0	0	0
Hodge Ranch	0	196	276	0	0	0	137	276	0	0	0	-59	0	0	0
Hop Creek	0	151	30	0	21	0	113	30	0	21	0	-38	0	0	0
Horse Ridge	0	105	126	0	0	0	53	126	0	0	0	-52	0	0	0
Hunt	0	35	21	0	0	0	26	21	0	0	0	-9	0	0	0

APPENOIX II-1, TABLE F (continued)

Component Allotment	Current Vegetation Use (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Initial Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Change Between Current Use and Initial Vegetation Allocations (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk
4. Eliminate Livestock Grazing															
Axtell	88	0	114	0	0	0	0	114	0	0	-88	0	0	0	0
Greenwich Cr.	13	11	52	0	0	0	0	52	0	0	-13	-11	0	0	0
Hatch Canyon	0	37	65	0	18	0	0	65	0	18	0	-37	0	0	0
Koosharem Creek	0	40	207	0	15	0	0	207	0	15	0	-40	0	0	0
Piute Dam	0	72	34	0	0	0	0	34	0	0	0	-72	0	0	0
Sall's Meadow	0	91	241	0	5	0	0	241	0	5	0	-91	0	0	0
Subtotal	101	251	713	0	38	0	0	713	0	38	-101	-251	0	0	0
GRANO TOTALS	9,039	18,943	15,460	120	1,726	7,559	17,132	15,296	120	1,711	-1,480	-1,811	-164	0	-15

[a]Grazing treatments are defined in Chapter 1. A table showing the acreage and allotments for each treatment follows:

Grazing Treatment	Component by Acreage and Allotment 1	2	3	4	Initial Total	Long-Term Total
1	3,575(3)	35,395(8)	0	0	38,970(11)	38,970 (11)
2	0	0	0	0	0	0
3	13,901(4)	138,428(23)	295,349(46)	0	447,678(73)	461,002 (79)
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	13,324(6)	13,324(6)	0
Total	17,476(7)	173,823(31)	295,349(46)	13,324(6)	499,972(90)	499,972 (90)

[b]Component 1 Range Development

Contour/Seed	200.0 ac.

[c]Component 2 Range Oevelopments

Chain/Seed	3,100.0 ac.
Seed/Browse	200.0 ac.
Contour/Seed	1,200.0 ac.
Spray 2,4-D (sage)	600.0 ac.
Pipeline	1.0 mi.
Raintraps	2.0 ea.
Reservoirs	4.0 ea.
Fence	3.0 mi.
Gully plugs	60.0 ea.

[d]Component 3 Range Developments

Chain/Seed	11,140.0 ac.
Plow/Seed	1,000.0 ac.
Burn	1,900.0 ac.
Contour/Seed	4,100.0 ac.
Spray 2,4-0 (sage)	2,000.0 ac.
Pipeline	20.0 mi.
Reservoirs	12.0 ea.
Troughs	2.0 ea.
Springs	11.0 ea.
Raintraps	2.0 ea.
Stock trail	3.25 mi.
Fence	64.5 mi.
Exclosure	1 (10 ac)
Gully plugs	220.0 ea.

APPENDIX II-1, TABLE F (concluded)

Component Allotment	Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk	Change Between Initial and Long-Term Vegetation Allocation (AUMs) Livestock Cat.	Shp.	Wildlife Deer	Antl.	Elk.	Alternative Season of Use	Grazing Treatments[a] and Range Developments
Axtell	80	0	40	0	0	+80	0	-74	0	0	--	Stock Trail 0.25 mi. Treatment 6 (long term 3)
Greenwich Cr.	13	55	58	0	0	+13	+55	+6	0	0	9/15-10/15	Chain/Seed 150 ac. Treatment 6 (long term 3)
Hatch Canyon	0	90	65	0	18	0	+90	0	0	0	No change	Chain/Seed 320 ac. Fence 3.5 mi Treatment 6 (long term 3)
Koosharem Creek	0	150	207	0	15	0	+150	0	0	0	--	Chain/Seed 300 ac. Treatment 6 (long term 3)
Piute Dam	0	462	42	0	0	0	+462	+8	0	0	No change	Pipeline 0.1 mi. Chain/Seed/ Spray 400 ac. Treatment 6 (long term 3)
Sall's Meadow	0	176	321	0	5	0	+176	+80	0	0	--	Exclosure 1 (10 ac.) Contour/Seed 1,000 ac. Gully plugs 60 ea. Treatment 6 (long term 3)
Subtotal	93	933	733	0	38	93	+933	+20	0	0		e
GRAND TOTALS	16,452	29,806	20,919	199	2,237	+8,893	+12,674	+5,623	+79	+526		f

[e]Component 4 Range Developments

Chain/Seed	1,170.0 ac.
Contour/Seed	1,000.0 ac.
Total	(2,170.0) ac.
Pipeline	0.1 mi.
Stock trail	0.25 mi.
Fence	3.5 mi.
Exclosure	1 (10 ac.)
Gully plugs	60.0 each

[f]Total Range Development

Chain/Seed	15,410.0 ac. (20 allotments)
Plow/Seed	1,000.0 ac. (2 allotments)
Seed/Browse	200.0 ac. (1 allotment)
Burn/Sage	1,900.0 ac. (2 allotments)
Contour/Seed	6,500.0 ac. (7 allotments)
Spray/Sage 2,4-D	2,600.0 ac. (3 allotments)
Total	(27,610.0) ac.
Pipeline	21.1 mi. (10 allotments)
Reservoirs	17.0 ea. (8 allotments)
Troughs	2.0 ea. (1 allotment)
Springs	7.0 ea. (4 allotments)
Raintraps	2.0 ea. (2 allotments)
Stock trail	3.50 mi. (3 allotments)
Fence	71.0 mi. (12 allotments)
Exclosures	2 (10 ac.) (2 allotments)
Gully plugs	340.0 ea. (5 allotments)

APPENDIX II-2

Methodology for Determining Available and Potential Production of Vegetation

INTRODUCTION

The use of existing data for the development of alternatives in the Mountain Valley Planning Area requires the use of surveys at two levels of detail and from two time periods. The Sanpete Planning Unit data are one level and the Piute and North Sevier Planning Units data are another.

It is generally acknowledged in the range management profession (Stoddard, Smith, and Box, 1975) that the methods used in range surveys are not a precise means of determining grazing capacities. Surveys have, however, served as a useful means of allocating portions of a large range area among several claimants when individual allotments are made. Consequently, the BLM has determined that the existing surveys could serve to: (1) allocate vegetation to big game and livestock and; (2) adjust stocking rates pending verification using proper use studies. The methodology for each of the surveys is explained below.

SANPETE PLANNING UNIT DATA

Current Capacity

A range survey using the ocular reconnaissance method was completed in 1978 for the Sanpete Planning Unit. That survey was checked using the forage weight estimated method and results were interpreted using an overlap computer program. The program was designed to determine the grazing capacity for any kind of animal using an allotment during a growing season. (This reconnaissance survey followed the methodology explained in the Hot Desert Grazing Environmental Statement.)

Potential Capacity

Range conditions were determined by comparing the data from range surveys and condition classification guides prepared by the Soil Conservation Service (1976). Range site potentials were referenced to range sites located in the planning area. Table A is an example of the information provided for one of the range sites in the planning area.

TABLE A

Example: Estimated Yields by Condition Classes, SCS Range Site Description 111. Semidesert Stony Loam 4(1)-Arno, Orhy, Atco

		Pounds Per Acre Air Dry Total Annual Yield	
Class	Percent	Favorable Years	Unfavorable Years
Excellent	76-100	750-1,050	475-600
Good	51-75	900-400	340-550
Fair	26-50	700-600	300-550
Poor	0-25	500-600	200-450

(continued)

Using table A for site potential for each allotment, BLM biologists determined the estimated yield for each site. Range developments, grazing treatments, and improvements expected from proper utilization levels were considered in determining the expected vegetation production increase in 20 years. These new levels are the basis for the long-term allocation. URA Step 4 contains tables which show these calculations by allotment. An example of this is shown for the Little Valley Allotment:

Extimated yield	742 AUMs
Pinyon-juniper chaining and seeding (1,220 acres)	244 AUMs
Spraying (600 acres)	120 AUMs
Grazing treatment (spring rest 1 out of 4 years)	405 AUMS
Long-term usable vegetation production	1,511 AUMs

Existing Livestock Use

Because only a few actual counts of livestock on BLM allotments exist, the licensed use for the last 9 years was averaged and this figure determined as the current actual use. The trend of livestock use in the area has been downward during the study period. Appendix III-6 shows the licensed use by allotment for the 10-year period.

Existing Use and Projected Needs for Big Game

BLM requested assistance from UDWR for existing and projected needs for big game to be used in this EIS. BLM and UDWR biologists have worked together to produce these numbers. The methodology is shown below.

Projected deer and elk population figures (prior stable) for each allotment were developed from Utah's Division of Wildlife Resources' (UDWR) prior stable herd unit population figures (Rodney John and UDWR's Computer Program). The Central Regional Office of UDWR provided future population and AUM needs by allotment for most of the Sanpete Planning Unit. These figures included all lands within the allotments; hence, they were reduced to represent only the AUMs needed from public lands in each allotment.

These mean figures were the base figures provided by the UDWR. The current or short-term average figures (5 year) for herd units were developed from data used for the mean population figures. From that data, average harvests and their percentage of the optimum herd unit population were determined by BLM biologists. Since most of the UDWR's population work was based upon buck harvests and all but the last 5 of the data years were either sex hunts, it was assumed that the percentage was not constant. The number of bucks harvested from herds is higher on a buck only hunt than on either sex hunts. A discussion with Rodney John, who developed UDWR's computer program, indicated that the addition of about 2 percent of the actual average harvest should compensate for the difference between either sex and buck only harvests.

(continued)

An example for Herd Unit 41 is shown below.

Total population optimum (prior stable)	=	14,400.0
Average harvest	=	1,655.0
Percent of total population	=	11.5 percent
Add 2 percent harvest adjustment	=	13.5 percent
Average 5 year harvest	=	1,641.4
Five year population estimate $\frac{1,641}{135}$	=	12,158.0

This figure was then spread evenly over the entire mule deer winter range for Unit 41 to arrive at a deer per acre figure. The result was next applied to the total acreage of deer winter range in each allotment, and later adjusted to the acres of BLM winter range in each allotment.

UDWR provided no figures, by allotment, for Herd Unit 54 in the Valley Mountains. In this case, Rodney John's "prior stable" computer figure was used as outlined in the previous paragraph to develop both current and future AUM figures. An example for Herd Unit 54 is shown below.

Prior stable population 10,300	5-year estimate 5,222
Total acres winter range 162,000	Total acres winter range 162,000

These figures result in
figures of

1 deer per 16 acres	1 deer per 31 acres
Prior stable levels	Current use

for Swedes Canyon Allotment
3,073 ac. X 1 deer/31 ac. = 99 deer or 3,073 ac. X 1 deer/16 ac. = 192 deer

The deer use shown above is for all lands in the allotment. Adjustments for public lands only drop the current and long-term deer numbers to 89 and 173, respectively.

PIUTE AND NORTH SEVIER PLANNING UNITS

Current Capacity

Range surveys completed prior to 1965 (which were used for adjudication) were used to indicate the capacity of the North Piute and Sevier Planning Units. The reliability of these surveys was fieldchecked in 1976 and 1977.

At the time of the adjudication of livestock grazing privileges, no real attempt was made to tie the surveys to actual wildlife numbers. Wildlife, primarily mule deer, along with some elk and antelope, were being accommodated on the range at the time and were presumed to be at proper stocking levels. Follow-up adjustments in stocking rates for livestock and wildlife were expected to follow an appropriate period of monitoring key areas of range and wildlfe habitat.

(continued)

APPENDIX II-2 (concluded)

As a basis for updating estimates of forage production for purposes of making allocations to big game and livestock, the following approach was taken:

1. Estimated big game AUM use was added to livestock AUMs, based on adjudicated values. The values for big game were based on UDWR estimates of big game use for the period of the livestock adjudication.

2. Livestock AUMs, by allotment, plus wildlife AUMs, equaled current forage production AUMs for purposes of allocation and for estimating potentials.

Using the overlap program, the conversion ratios for livestock to big game species were determined and alternative initial stocking levels computed.

Existing and Potential Capacity for Livestock Use

The existing and potential capacity for livestock use levels were determined as explained above.

Existing Use and Projected Needs for Big Game

Current deer AUM usage in Sevier and Piute Counties is based upon figures provided by the Southern Region of UDWR in 1974. Norm Bowden, Regional Game Manager for the Southern Region, suggested that BLM use these figures, developed by Grant Jense, as current population figures and the 1979 computer printouts (prior stable numbers) as the future population figures. The deer numbers were then multiplied by a 5-month use period and converted to AUMs by using 5.8 to 1 for deer, 9.6 to 1 for antelope, and 1.9 to 1 for elk as conversion ratios.

Example

Chicken Coop Allotment. Grant Jense requested forage for 250 deer for 5 months. The AUM computation is 250 deer X 5 months ÷ 5.8 (5.8 to 1 conversion ratio) = 215.51 AUMs.

Projected need figures for Sevier and Piute Counties and their AUM needs were developed as discussed above for Herd Unit 54.

APPENDIX II-3

Background Vegetation Information

This appendix shows vegetation cover, composition by species, and vegetation type in acres, by allotment, for all public lands within the planning area. Because of space limitations, the names of vegetation types and plant species are abbreviated to symbols.

This appendix is divided into two tables, Table A is a list of important vegetation types and species. Table B is a characterization of the vegetation by allotment. The source of this information is the range surveys for the Mountain Valley Planning Area.

TABLE A

List of Important Vegetation Types and Species

Vegetation Types	Key Species	Symbol	Genus & Species	Common Name	Growth Form
1 AGCR = Agropyron cristatum, crested wheatgrass type	Key	AGCR =	Agropyron cristatum	Crested wheatgrass	Grass
1 BRTE = Bromus tectorum, cheatgrass type	Key	AGIN =	Agropyron intermedium	Intermediate wheatgrass	Grass
1 ELJU = Elymus junceus, Russian wildrye type		AGSM =	Agropyron smithii	Western wheatgrass	Grass
4 ARNO = Artemisia nova, black sagebrush type		AGSP =	Agropyron spicatum	Bluebunch wheatgrass	Grass
4 ARTR = Artemisia tridentata, big sagebrush type		ARPU =	Aristida purpurea	Three-awn grass	Grass
4 ARAR = Artemisia arbuscula (indistinct from black sagebrush type)		BOGR =	Bouteloua gracilis	Blue grama	Grass
9 JUOS = Juniperus osteosperma, pinyon-juniper type		BROMUS			
5 CEMO = Cercocarpus montanus, mountain mahogany type		IN =	Bromus inermis	Smooth brome	Grass
7 WASTE = No vegetation indicator, unsuitable for grazing		CI =	Bromus ciliatus	Fringed brome	Grass
5 PUTR = Purshia tridentata, bitterbrush type		AN =	Bromus anomalus	Nodding brome	Grass
9 PIED = Pinus edulis, pinyon-juniper type		BRTE =	Bromus tectorum	Cheatgrass	Grass
10 QUGA = Quercus gambelii, scrub oak type		HIJA =	Hilaria jamesii	Galleta	Grass
6 ABCO = Abies concolor, white fir type	Key	KOCR =	Koeleria cristata	Junegrass	Grass
13 ATCO = Atriplex confertifolia, shadscale type	Key	ORHY =	Oryzopsis hymenoides	Indian ricegrass	Grass
10 ASPEN = Populus tremuloides, quaking aspen type		POA spp.=	Species uncertain	Bluegrass	Grass
14 SAVE = Sarcobatus vermiculatus, greasewood type		SIHY =	Sitanion hystrix	Squirreltail	Grass
15 EULA = Ceratoides lanata, winterfat type	Key	STCO =	Stipa comata	Needle-and-thread grass	Grass
	Key	STLE =	Stipa lettermani	Letterman needlegrass	Grass
		AMUT =	Amelanchier utahensis	Serviceberry	Shrub
		ARTEMESIA			
	Key	NOVA		Black sagebrush	Shrub
	Key	Arbuscula		Black sagebrush	Shrub
		ARSP =	Artemesia spinescens	Bud sagebrush	Shrub
		ARTR =	Artemesia tridentata	Big sagebrush	Shrub
	Key	ATCA =	Atriplex canescens	Fourwing saltbush	Shrub
		ATCO =	Atriplex confertifolia	Shadscale	Shrub
	Key	CEMO =	Cercocarpus montanus	Mountain mahogany	Shrub
	Key	LE =	Cercocarpus ledifolius	Curlleaf mountain mahogany	Tree
	Key	IN =	Cercocarpus intricatus	Smallleaf mountain mahogany	Tree
		CHNA =	Chrysothamnus nauseosus	Rabbitbrush	Shrub
		CHVI =	Chrysothamnus viscidiflorus	Little rabbitbrush	Shrub
		QUGA =	Quercus gambelii	Scrub or gambel oak	Tree/shrub
		EPHEDRA	spp.viridis & nevedensis	Mormon tea	Shrub
	Key	EULA =	Ceratoides lanata	Winterfat	Sub/shrub
		GUSA =	Xanthocephalum sarothrae	Snakeweed	Sub/shrub
	Key	PUTR =	Purshia tridentata	Bitterbrush	Shrub
		SAVE =	Sarcobatus vermiculatus	Greasewood	Shrub
		TETRADYMIA	spp. spinosa & canescens	Horsebrush	Shrub
	Key	COMES =	Cowania mexicana	Cliffrose	Tree/shrub
		SYOR =	Symphoricarpos oreophilus	Snowberry	Shrub
		Mustard spp. =	Various, primarily descurainia, malcolmia, Sisymbrium, Drama, and others		Forb
		OPUNTIA spp.	Various, including fragilis, erinacea, and others		Cactus
		PHLOX spp.	Various, including hoodii, multiflora, and others		Forb
		RATE =	Ranunculus testiculatus	Burr-buttercup	Forb
		SAKA =	Salsola kali	Russian thistle or tumbleweed	Forb
		JUOS =	Juniperus osteosperma	Utah juniper	Tree
		PIED =	Pinus edulis	Pinyon pine	Tree
		GRSP =	Grayia spinosa	Spiney hopsage	Shrub

(continued)

APPENDIX II-3 (continued)

TABLE 8

Characterization of Vegetation By Allotment

Allotment	Percent Vegetation Cover	Vegetation Type	Acres	AGCR[a]	AGIN[a]	AGSM	AGSP	ARPU	BOGR	Bromus in. ci. an.	BRTE	HIJA	KOCR[a]	ORHY[a]	POA spp.	SIHY	STCO[a]	STLE[a]	AMUT	Artemesia nova arbuscula[a]	ARSP	ARTR
				Percent Composition By Species																		
Angle Bench	18	9 JUOS	1,045						5					2		2						44
	20	4 ARTR	5,633					1	38					1						46		14
Antelope Valley	20	4 ARNO	8,501				1				5			4	1	2				41		1
	17	9 JUOS	4,034			T	11				1			3	T	T						44
	19	13 ATCO	268								10			T		T						
Apple Spring	23	4 ARTR	251	3		1					9			2		1	1					45
	21	9 JUOS	1,389				6				8			4	T		1					22
Aurora	1	9 JUOS	1,250				6				T			8		T				35		
	13	4 ARNO	4,662				5	T			1			16		1	1	1		50		
	20	4 ARTR	684	T		T	5				T			10		T				8		
	4	13 ATCO	3,760				7				5	T		5						7		
Axhandle	19	4 ARTR	770		2						T			T								77
	12	7 Waste	1,722		1		1															1
	30	9 JUOS	280											1		2						34
	40	10 QUGA	658				T							1	T	T			1			7
Axtell	14	4 ARNO	233				6				1			2	4	2				40		
	12	13 ATCO	989								3			1		T						
Bear Valley	11	4 ARTR	1,481				1						1		3	2	1	3		4		60
	11	10 QUGA	686			1	2								6	4	6	2				45
	22	10 Aspen	249							5					20		10	32				10
Box Creek	16	9 JUOS	705						4					8	11	1						17
	22	4 ARNO	706						33					13		6				46		2
Burrville	18	9 JUOS	540				2		1					T		T	1					92
	22	4 ARTR	2,760				1		1					1	1	1						87
Canal	9	13 ATCO	4,000					1	T		4	13		T		T	1				T	
	12	14 SAVE	51									1										
Cannon-Whitaker	3	9 JUOS	500											1		1	1			30		45
	19	4 ARTR	280				2		7		3			3		2	3			8		60
Cedar Grove	15	9 JUOS	190											5			1			3		78
	25	4 ARTR	5,647														1			4		82
	43	10 Aspen	290							10			35			10		7				12
	28	4 ARAR	17,353						2						1			6		69		12
Chicken Coop	18	9 JUOS	3,228				7				5	T		15	3	T			5	2		
	15	4 ARAR	3,466								9	T		T	3	3				18		
	23	13 ATCO	641								5	T		T	1	3				9	5	2
Deer Flat	16	9 JUOS	195													T						
		1 AGCR	510	Unsurveyed 1977 seeding																1		8
Denmark	15	4 ARNO	8,247								1			8		1				40		
	22	4 ARTR	335											4		T				5		78
	17	9 JUOS	8,303				8				1			5	T		T			21	T	3
	37	14 SAVE	202								22			1								
	14	15 EULA	969			10					T			30		T				1	16	T
Dry Hill	16	9 JUOS	841				8							1	2					9		3
Dry Lake	21	9 JUOS	5,190				1							9	2	1						9
	33	4 ARTR	2,073	6			10							2	15		1	3				44
	21	1 AGCR	257	14	55											19	6					6
Dry Wash	Unsurveyed																					
Durkee	20	4 ARTR	2,657											1		4						
	13	13 ATCO	1,238													1					1	70
East Bench	19	9 JUOS	4,672				1		21					4	5	2						
	20	4 ARTR	5,941					16	32					1								15
	17	4 ARNO	4,945						43					2			1			51		32
East Fork	10	9 JUOS	3,242				20		10					5	10	5						5
East Piute	18	9 JUOS	3,751				3		6					1	3							
	18	4 ARTR	1,262						25			4		2		5						8
	12	13 ATCO	305					5						1								2
	13	14 SAVE	588						3												3	

APPENDIX II-3, TABLE B (continued)

Percent Composition By Species

ATCA[a]	ATCO	CEMO	Cercocarpus led. int.[a]	CHNA	CHVI	QUGA	Ephedra spp.	EULA[a]	GUSA	PUTR[a]	SAVE	Tetrademia spp.	COMES[a]	SYOR	Mustard spp.	Opuntia spp.	Phlox spp.	RATE	SAKA	JUOS	PIED	GRSP	Allotment
																				11	36		Angle Bench
	19				8			1				2		4				3		2			Antelope Valley
	1	T			8			T												22	5		
	18							12				30						3					
					19			1								1			6	1			Apple Spring
		1			3	1				1						1				40	2		
	5				7		4	3	2										7				Aurora
	8			1	1			1	4			5											
	1						T	5	4														
	60			T	3		T	T	2			3											
						T				6										1			Axhandle
						6	1			T						T				30	36		
						5								2						40	3		
						22	1							9						19			
	25				14			T						2						2			Axtell
	81													9				5					
					5					2				7									Bear Valley
					3	8								12									
														3									
					3				1											20	33		Box Creek
									1														
																				2	2		Burrville
					1	3				3										T	T		
	35				9			T			T	1							25				Canal
	2																		50				
		5	10		1	4				1				1									Cannon-Whitaker
					10	1				1													
			1		3															3			Cedar Grove
					6																		
					8					1													
5			6		6							2								14	10		Chicken Coop
	36			3		14		4			4	3					3			T			
	32				4	7	T	14			2	6											
						2				3							6			33	47		Deer Flat
	25				10				1			1							7				Denmark
					12			T	T							T				T			
	1				2		2		2								5			18	31		
											55											1	
	15							24				T											
							3													59	8		Dry Hill
					6					2										29	34		Dry Lake
					5					5										4	2		
																							Dry Wash
	14				5						2	2											Durkee
	73				20				2														
					9															10	31		East Bench
					13				6														
									3														
					15			5												5	20		East Fork
	9									3										25	22		East Piute
	26				37																		
	36				5		30				9											5	
	23				13						38	3										17	

(continued)

APPENDIX II-3, TABLE 8 (continued)

Allotment	Percent Vegetation Cover	Vegetation Type	Acres	AGCR[a]	AGIN[a]	AGSM	AGSP	ARPU	BOGR	Bromus in. ci. an.	BRTE	HIJA	KOCR[a]	ORHY[a]	POA spp.	SIHY	STCO[a]	STLE[a]	AMUT	Artemesia nova arbuscula[a]	ARSP	ARTR
				Percent Composition By Species																		
Elbow	18	9 JUOS	3,045				2		1					9		1						14
	14	4 ARTR	3,996								1										1	80
	12	13 ATCO	342											1		1						
Fayette Cattle	21	9 JUOS	5,010				2				T			1								4
	30	4 ARTR	555			1	2				6			3	T	1						64
	42	10 QUGA	35			2																16
	33	1 AGCR	3,980	30		17	1								3							10
Fishlake	30	9 JUOS	2,640					4	1					2						1		91
	23	4 ARTR	17,463				1	3	1					4	1		6		1	13		66
	25	10 QUGA	720				6		1		1			2		2	3		3			66
	12	1 AGCR	1,440	62																		37
Flat Canyon (N. Sevier)	10	4 ARAR	1,455				1	1			2			1	T	T				43	5	15
	10	13 ATCO	884					T			35	10										
Flat Canyon (Sanpete)	19	9 JUOS	2,367				4				2			1						8		2
	19	4 ARTR	616								12			4		4						49
Greenwich Creek	28	9 JUOS	420						6					3			4					85
	32	4 ARTR	160						2					1								97
Gunnison Valley	13	9 JUOS	6,183				2				10			3	T					9		5
	23	4 ARTR	513				1				4			3	1	T	T			30	1	16
	18	4 ARNO	2,584				1				5			1	T	T				74		
	14	13 ATCO	4,691			T	T				8			2	T	1				2		4
	25	14 SAVE	414								1					1						6
Gypsum	24	9 JUOS	6,786				3				1				T							10
	6	4 ARTR	6,473	T		T	2				T			16			T					47
	15	13 ATCO	4,204				1					T		4			T					10
	8	5 CEMO	2,303											4								
Hatch Canyon	15	9 JUOS	310						4								3			6		78
	20	4 ARTR	830						12											2		83
Hayes Canyon	20	9 JUOS	4,914				6							1		T				8		2
	29	4 ARTR	450	1			7				1			23						2		54
	15	4 ARNO	734								3			1						33		26
	21	1 AGCR	915	47			5							8								10
Hodge Ranch	18	9 JUOS	7,628				2		1					1	1							24
	30	4 ARTR	3,184				3		11					2	5		1					39
	21	4 ARNO	2,772						30											69		
Hop Creek	23	4 ARTR	172				2			3				3		5	3					72
	35	10 QUGA	349			T	8			3				1	2		1	2	1			43
Horse Ridge	13	9 JUOS	855													T						
	43	10 QUGA	646																			15
	12	7 Waste	167		1		1															1
Hunt	8	9 JUOS	232								37	10		3		7						30
	10	4 ARTR	540								29					1						66
	25	13 ATCO	138								45				T							
Hunter Spring	23	9 JUOS	320				1		5					1			1					83
	30	4 ARTR	2,553				3	3	23					4			12					45
Indian Hollow	23	4 ARTR	423				2				3			3		5	3					72
	35	10 QUGA	617				8				3			1	2		1	2	2			43
Jones	12	13 ATCO	330								T											52
Joseph	4	9 JUOS	330				6				2	2		9		1						30
	6	4 ARTR	630				T				1	4		2	T	1				44		33
	8	13 ATCO	2,620								8	5		6		1						1
	2	5 PUTR	270								1			5				2				8
		7 Waste	30																			
Junction	28	9 JUOS	1,112					1			1			5		1		2				22
	23	4 ARTR	7,289					1	16					7		2	3					61
	19	1 AGCR	728	2					21					3		4	14					5
Kingston Canyon	18	9 JUOS	1,160						5					2		2						44
	17	4 ARTR	1,163						32			4		6		2						26
Koosharem Creek	23	9 JUOS	890				1		3					1			3					88
	20	4 ARTR	1,028						2					1								97
Little Valley	17	9 JUOS	3,545				4				1									20		5
	28	4 ARTR	1,447				15				1			1						35		30
	21	1 AGCR	225	47			5							8								10
	33	10 QUGA	1,877		7		2							1	1				1			2
Lone Cedar	22	9 JUOS	9,763				4				T			1	1					6		2
	19	4 ARNO	1,174								2			10		2				55		
	23	4 ARTR	2,345	1		1	8							9		T				2		67

Percent Composition By Species																						
ATCO	CEMO	Cercocarpus Led. int.[a]	CHNA	CHVI	QUGA	Ephedra spp.	EULA[a]	GUSA	PUTR[a]	SAVE	Tetrademia spp.	COMES[a]	SYOR	Mustard spp.	Opuntia spp.	Phlox spp.	RATE	SAKA	JUOS	PIEO	GRSP	Allotment
2				11			3												29	21	7	Elbow
				10														8				
55				12		15				4											4	
	6	10		2	9	1													35	24		Fayette Cattle
			10	5									1									
					38								8						4			
				8	3								3						10	1		
																			1			Fishlake
					1	1			3													
	3			1	3				5				1									
15			10			2	T				1										3	Flat Canyon (N. Sevier)
54										T	1											
	5		1	2	1	4													45	17		Flat Canyon (Sanpete)
8				8			T			5												
																			3			Greenwich Creek
4	13			7		10													23	8	1	Gunnison Valley
17				7			3							3			4		1		1	
5				5			T				1								1	1		
50				2			T							13			13					
3			8											10			4					
				1					7							7			39	27		Gypsum
20				10		T	3				T											
64	1			1		1	2				1	1						1	T	T		
1	30					15					1	1							25	18		
		2		3															4			Hatch Canyon
				3																		
	1	1				4										3	5		36	33		Hayes Canyon
				3															5			
9				15									3						1			
			1	2	3														17	3		
				2					2										22	44		Hodge Ranch
				7					14				8						2	3		
								1														
						1				5					1							
					2	26				3			3		1				2			Hop Creek
																			3			
		12				2	9															
						32							19						42	30		Horse Ridge
			20			6	1		1										4	1		
																			30	36		
						T	5			5												
	1										1											Hunt
	43										7											
					2					3												
					5														3			Hunter Spring
					1	1				5					1							
					2	26				3			3		1				2			Indian Hollow
																			3			
3					5				1		4											
																			35	T		Jones
	10		4	22	5																	
	9				2		1	T	1		T		T		T							Joseph
T	70				3		1	T	T											2		
		3	5	18			3		4	35	4											
					2	1				1												
					3														56	6		Junction
				29	19														1	1		
					10														11	36		Kingston Canyon
																			7	11		
																			4			Koosharem Creek
						2	1															
	2				5														36	22		Little Valley
				1	2	3													2	2		
		16			2	38				1	1		14						17	3		
																			5	3		
	1	6			1		4															
	7				9														30	40		Lone Cedar
					3		T				1						12					
																			3			

(continued)

Allotment	Percent Vegetation Cover	Vegetation Type	Acres	Percent Composition By Species: AGCR[a]	AGIN[a]	AGSM	AGSP	ARPU	BOGR	Bromus in. ci. an.	BRTE	HIJA	KOCR[a]	ORHY[a]	POA spp.	SIHY	STCO[a]	STLE[a]	AMUT	Artemesia nova arbuscula[a]	ARSP	ARTR
Long Flat	17	4 ARNO	4,896				1				11			2	1	1				52	1	4
	14	9 JUOS	1,071				10				1			2						20		3
	29	1 BRTE	70	1							77											
Lost Creek	23	9 JUOS	2,164				11				13			10	10	T			9			5
Magleby	10	4 ARNO	914				1				2			1		1				43	5	15
Manning Creek	15	9 JUOS	728						2					18		2						20
	15	4 ARTR	4,827						1		7			3		2	1					63
	13	13 ATCO	1,686													1					1	
Maple Canyon	14	9 PIEO	1,225				T				1			T		T						4
	55	4 ARTR	385				1								1							44
Marysvale		1 AGCR	286	Not surveyed																		
	16	9 JUOS	375													T			1			8
	22	4 ARTR	1,338											18	4	1	5					51
Mayfield Cattle	9	9 JUOS	1,039								1			3		T						6
	16	13 ATCO	525				1				5			T	1	1				4	1	30
Middle Hollow	13	9 JUOS	73	T			2				T			2	T							
	16	4 ARNO	183	3			3				6			3	T		T			30		10
	16	1 AGCR	508	60			3				2			1	T					6		
Monroe Coop	8	9 JUOS	6,383				3				12			2	1	1						53
	14	4 ARTR	7,210				1							1								93
	20	4 ARAR	2,880				4				3			2	1				1	29		21
	23	13 ATCO	4,902											T		8						64
	9	1 AGCR	2,827	52										6						4		33
North Cove Mountain	21	9 JUOS	7,237				4				7			5	1	3						35
	38	4 ARTR	4,636	3	1	T	14				T			1	9	2			1			41
	41	5 QUGA	1,116	1			5		2					1	6	1			2			23
North Hollow	34	9 JUOS	323				1				2			2			T			6		1
	18	1 AGCR	995	12		3	7				6			4	1		T			7		5
North Narrows	16	9 JUOS	7,869					1	3					8	11	1						17
	20	4 ARTR	1,371						24					1								75
	22	4 ARNO	4,473						33					14		5				46		2
Oak Spring	15	9 JUOS	1,320						1					2								94
	22	4 ARTR	5,055						5					3		1	1			14		72
Ogden	18	9 JUOS	6,155											1		2						22
	17	4 ARTR	1,960													2						78
	21	13 ATCO	1,335				3		3		6			14		4	12					4
Parson Mills	10	13 ATCO	881								22	3		4								5
Pearson-Lewis	27	9 JUOS	60					1	1		3			5		1	1					15
	22	4 ARTR	1,913						6					1			1					83
P-Hill	27	9 JUOS	60					1	1		3			5		1	1					15
	22	4 ARTR	2,140						2					1								93
Piute Dam	21	9 JUOS	122				3															8
	16	4 ARTR	1,203					1	2		1											85
	13	13 ATCO	1,039													1					1	
Plateau		4 ARTR	5,035				5		T					7	7	2	10	1				40
Poulson	8	4 ARTR	192			2	2							2						10		80
	10	13 ATCO	408									2	1				2					4
Red Canyon	18	9 JUOS	3,833				4							T	2					15		5
	14	4 ARNO	1,792				2				1			1	3					49		5
	34	4 ARTR	390			1	1				2			T						1		61
	72	10 QUGA	2,095											4		T	T		T			9
Ricks Pasture	32	4 ARTR	721					2	20					3								65
River	25	4 ARTR	155								4			T		2						74
	27	14 SAVE	333								2					T						2
Rock Canyon	16	9 JUOS	5,375				2							T	T					1		
	16	4 ARTR	2,129	T			1				10			3	2	2				2	T	40
	50	10 QUGA	500			T	2							T					T			5
	11	14 SAVE	20								4											10
	29	1 AGCR	770	45			2				5			2	1							12
Rocky Ford	12	9 JUOS	2,760						1					1								92
	18	4 ARTR	8,687				1	1	3					3	1		4			2		54
Rough Canyon	16	9 JUOS	3,134				5				3			1	2	T				12		10
	17	4 ARTR	1,043								4			1	T	3						82
	6	1 BRTE	105	12							27			T		1						T

APPENDIX II-3, TABLE B (continued)

Percent Composition By Species																							
ATCA[a]	ATCO	CEMO	Cercocarpus led. int.[a]	CHNA	CHVI	QUGA	Ephedra spp.	EULA[a]	GUSA	PUTR[a]	SAVE	Tetrademia spp.	COMES[a]	SYOR	Mustard spp.	Opuntia spp.	Phlox spp.	RATE	SAKA	JUOS	PIED	GRSP	Allotment
					T	T	4		T						5					65	17		Long Flat
T	1			T	16			1							8					20	1		
1				T	1										9					15	T		
		1			2	3				3			T	1									Lost Creek
					3																		
		2	7	1	7	13								2									Magleby
					1							1										1	
				1							2					1							Manning Creek
					5											T				31	7		
					1	10				4				1						1	1		
						42				2				2			5			2			Maple Canyon
		4				16				T										20	33		
	1	2			10	1			4						5					6	4		Marysvale
					3				1											20	34		
																							Mayfield Cattle
										T										2			
					1					1										1			
																							Middle Hollow
					15	1				1							3			26	29		
	15				4																		
	19				25											1				4		1	
																							Monroe Coop
	47				2			T			9											1	
			1		3	1				1										55	10		
					5																		
			1		3	1				1										55	10		North Cove Mountain
					1																		
					3																		
				1	10															44	42		North Hollow
		73			20				2													3	
					1				5	17				2									North Narrows
	3																						
	78			4	3																		
																							Oak Spring
				1		2											1			48	15	1	
					13												6			14	2		
		1		14	1	3									1		1			4	1		Ogden
		6			1	68									2					3			
2																							
																							Parson Mills
					8						2					T				T			
											82					T		3					Pearson-Lewis
		16	2			4	2							1			2			35	30		
	2				28						T							4		1	T		P-Hill
		13	3		7	33								T			3			25	5		
	T			1							74	T											
					6	1														16			Piute Dam
		1			23					2													
																							Plateau
					2	1	2		2				5		4					36	9		
					1										3	T				2			Poulson
											1				30	1		15	6				
																				1			
	13				4			1				1				1				30	19		Red Canyon
	3	1			3		1																
															10	2							
				1																			
																				9	15		
				T	4	4																	
																						3	Ricks Pasture
	15			10		2						1											
																				14		14	River
	3				20			7										4		2		1	
					16																	3	
	73				20				2														Rock Canyon
																				20	15		
		16	30	T	1	2	3							10						8	1		
						23																	
																	6			33	47		
						2				3										4			Rocky Ford
	13				3																		
								1				5	15		5					13	2		
	24	5			16		2								12			11		T			Rough Canyon
	12				3			2			T												

(continued)

APPENDIX II-3, TABLE 8 (continued)

Allotment	Percent Vegetation Cover	Vegetation Type	Acres	AGCR[a]	AGIN[a]	AGSM	AGSP	ARPU	BOGR	Bromus in. ci. an.	BRTE	HIJA	KOCR[a]	ORHY[a]	POA spp.	SIHY	STCO[a]	STLE[a]	AMUT	Artemesia nova arbuscula[a]	ARSP	ARTR
Salls Meadow	6	9 JUOS	2,027								25	2		8								55
	9	13 ATCO	1,778								25											5
	8	14 SAVE	505																			5
	9	4 ARTR	890											T								94
	11	1 AGCR	900	39										4		22				34		
Sand Ledges	28	9 JUOS	5,427				3				3			2	4	1	1		1		23	
	41	4 ARTR	769				2				T			1	4	1					57	
Sanpitch (North & South)	9	9 JUOS	100								1			3		T						6
	12	4 ARNO	709								4			2	1	2	2			61	2	
	23	4 ARTR	150								2			3	T	1				4		32
South Hollow	25	9 JUOS	478				4							2						7		3
	17	4 ARTR	433	8							4			3	T	T						40
	20	1 AGCR	1,075	18			3				4			5		5				22		3
	35	10 QUGA	110	1							7			3	T							3
South Narrows	17	9 JUOS	6,769						2					6	11							19
	17	4 ARNO	5,986						43					2			1			51		
South Valley	15	9 JUOS	5,660				2							T								2
	17	4 ARNO	6,607								2			11		1				55	2	3
Swedes Canyon	22	9 JUOS	1,624				18													15		T
	24	4 ARNO	1,199				15				4			5	1					51		4
Tate	16	9 JUOS	578																1			8
		4 ARTR	137																			
	21	13 ATCO	957				3		3		6			14		4	12					4
Ten Mile		1 AGCR	273	Unsurveyed																		
	15	9 JUOS	741											9		1	1					20
	16	4 ARTR	2,905					1	2													74
Timber Canyon	21	9 JUOS	10,828				3				1			2		T	T			1		4
	18	4 ARNO	74				1				2			2	2	2	T			51		
	26	4 ARTR	1,241			3					7			2		2	T				1	60
	28	1 ELJU	507	9		9				4	4				1					18		5
	41	10 QUGA	1,948		1	4	2				T			1	1	1		1				18
	25	6 ABCO	662				1								T							
Twelve Mile	9	9 JUOS	50								1			3		T						6
	24	4 ARTR	110								2			T		1						57
Twist	15	9 JUOS	307				4							3	2					66		19
	10	4 ARTR	2,630								10			T		T	T			11		59
	10	13 ATCO	2,370								5	11		1		T						4
Uinta	23	4 ARTR	159	T		T	2				3			3		5	3					72
	35	10 QUGA	407			T	8				3			1	2	T	1	2	1			43
Under-the-Rim	16	9 JUOS	1,140				3				2			T	T					7		4
	14	4 ARTR	142			11	T				5			2		T	T					44
Washburn	9	4 ARTR	190											T								94
	5	13 ATCO	105									T		T								
West Side	15	9 JUOS	1,742				4							2		1				9		5
	18	4 ARNO	1,764				9				1			6		1				58	1	5
Wilson Dump	7	13 ATCO	1,121				2				37	1		2			1			8	3	
Wood Hollow	21	9 JUOS	3,590				3				3			2	T	1	1					22
	23	4 ARTR	85	1		1	1				6			3		3	2					60
	35	10 QUGA	40			T	8				3			1	2	T	1	2				43

[a]Key Species.

APPENDIX II-3, TABLE B (concluded)

Percent Composition By Species																							
ATCA[a]	ATCO	CEMO	Cercocarpus Led. int.[a]	CHNA	CHVI	QUGA	Ephedra spp.	EULA[a]	GUSA	PUTR[a]	SAVE	Tetrademia spp.	COMES[a]	SYOR	Mustard spp.	Opuntia spp.	Phlox spp.	RATE	SAKA	JUOS	PIED	GRSP	Allotment
																5							Salls Meadow
	69										1												
											87												
					3	2				7			1	1						32	10		Sand Ledges
					7					15				3								2	
	24	5			16		2	1				5	15		5					13	2		Sanpitch
	8				1			T										7					(North &
	2				10			7										24		2			South)
	9	1					2													45	21		South Hollow
				T	40			T												T			
					5															19	4		
		12				36			8											18	6		
					3															16	43		South Narrows
									3														
		1	4	1		1	1										2			20	58		South Valley
	18			1	4							T											
	T				T		2										3			19	38		Swedes Canyon
	5				5													5		1			
						2					3						6			33	47		Tate
	19				25											1				4		1	
									9							1				27	29		Ten Mile
				1	10											8							
T		11	4		1	1	2						1							42	16		Timber Canyon
	15				9			T				2			4					1			
	7				1						8	1											
		T			3	2	T			T									ABCO	6	4		
		1		1		28	T							14					T	5	3		
			18																29	5	5		
	24	5			16		2	1				5	15		5					13	2		Twelve Mile
	2				1		T											7		15	5		
					1					2			2										Twist
	11				5											T						2	
	65				2			T	2	T	2								4			T	
					1	1			T	5						1				2			Uinta
		T			2	26				3				3		1				3			
					1	1	T											3		63	10		Under-the-Rim
					15			2	1		1	2								3			
	72										18					3							Washburn
	1			4	1		1										6			40	24		West Side
	9				3						2									1	1		
	38				3		T	4	1			4				1				T	T		Wilson Dump
		2			2	1				1						1				48	5		Wood Hollow
					10	T				2						1			3	1			
		T			2	26				3				3		1				3			

APPENDIX II-4

Methodology Used to Determine Grazing Management Treatments

The major criteria used to determine grazing treatments to be applied to specific allotments are: (1) season of use; (2) range condition and trend; (3) need for plant rest; (4) allotments where browse or grass species need improvement; and (5) kind of livestock use. All of these criteria are elements that can limit grazing on an allotment and improve watershed stability and range condition. Basically, all the proposed grazing management treatments for the Mountain Valley Planning Area would allow the range site to produce ground cover and vegetation for livestock and wildlife.

There are six grazing treatments proposed in Chapter 2 of this EIS. The following table (dichotomous key) shows how the determination was made in applying the treatments.

TABLE A

Key to Applying Grazing Treatments to Specific Allotments

A.	Rest total allotment area from livestock	Treatment 6
A.	Allow livestock use	Go to B below
B.	Allow no spring use	Treatment 1
B.	Allow spring use	Go to C below
C.	Allow spring use in Alternative F (25 percent)	Treatment 3
C.	Allow spring use in other alternatives	Go to D below
D.	Allow spring use for browse plant improvement	Treatment 4
D.	Allow spring use where browse plants are in satisfactory condition or not needed	Go to E below
E.	Allow spring use to maintain present condition and trend and/or use other seasons (i.e., summer, fall, winter)	Treatment 5
E.	Allow spring use to improve present condition and trend	Go to F below
F.	Allow spring use occasionally to improve range condition and trend with periodic rest and rotation	Treatment 2
F.	Allow spring use to improve range condition and trend limiting use to 25 percent of spring growth	Treatment 3

APPENDIX II-5

Rationale and Guidelines for the Development of Alternative F

Rationale for Establishing Alternative F:

1. Poor and fair condition ranges with static or downward trend must be changed to improving trend and higher condition classes. Changes are made by management systems, range improvements, and/or reductions in present use.

2. This alternative was initiated as a result of comments received during the public scoping meeting held on October 16, 1979.

   The general consensus was that, at many times, allotment combinations with two classes of livestock and several permittees does not work well and causes many administrative and management problems. In this alternative no allotments would be combined.

   It was also noted that many allotments are in good condition with improving trend. The present use seemed to be about right and the allotments were improving, yet the range survey capacity data indicated that the allotments should be scheduled for reduced allocations. The survey involves three factors (range condition, trend, and capacity) which sometimes involves discrepancies as stated above. In this alternative, the range condition and trend were studied and used to develop the course of action. The surveyed capacities were not used.

Guidelines for Establishing Alternative F:

Existing Condition and Trend	Action
1. Range in good condition with improving trend (75 percent or more).	Stock at current use or at surveyed forage level, whichever is higher.
2. Range in good condition with static or downward trend (50 percent or more); also, range in fair condition with improving trend (50 percent or more).	Stock at current use or at surveyed forage level, whichever is less.
3. Fair condition range with trend downward or static.	Reduce spring use to at least 25 percent of current annual production. (Note: if no spring grazing use, then stock to current use level and treat range or change season of use.)

(continued)

4.	Poor condition range with improving or static trend (60 percent).	Reduce spring use to at least 25 percent of current forage production.
5.	Poor condition range with downward trend (60 percent).	Eliminate all use for a two-year period, then monitor and restore use <u>if</u> range improves.

APPENDIX II-6

Implementation Schedule by Allotment and Year

Alternative A	Alternative B	Alternative C	Alternative F
Year 1			
Wood Hollow	Flat Canyon (SP)	Flat Canyon (SP)	Sall's Meadow
Wilson Dump	Wood Hollow	Wood Hollow	Axtell
South Hollow	Red Canyon	Red Canyon	Piute Dam
Rick's Pasture	Sanpitch (north)	Horse Ridge	Koosharam Creek
Poulson	South Hollow	Under-the-Rim	Hatch Canyon
New Sand Ledges	Under-the-Rim	Sanpitch North	Greenwich Creek
(Lost Creek)	Axhandle	South Hollow	Box Creek
(Sand Ledges)	Horse Ridge	Middle Hollow	Dry Lake
New N. Cove Mtn.	New Rough Cyn.	Axhandle	Dry Wash
(N. Cove Mtn)	(Dry Hill)	Little Valley	Horse Ridge
(Sall's Meadow)	(Rough Cyn)	North Hollow	Joseph
(Washburn)	South Valley	New Rough Canyon	Lost Creek
New Monroe Coop	Fayette Cattle	(Dry Hill)	Mayfield Cattle
(Monroe Coop)	Little Valley	(Rough Canyon)	Sand Ledges
(Parson Mills)	Denmark	South Valley	South Hollow
Middle Hollow	Hop Creek	Hop Creek	Twelve Mile
Joseph	New Lone Cedar	Fayette Cattle	Wilson Dump
Jones	(Lone Cedar)	Denmark	Poulson
Hunt	(Swedes Canyon)	New Lone Cedar	Ogden
Horse Ridge	(West Side)	(Lone Cedar)	Oak Spring
East Piute	Maple Canyon	(Swedes Canyon)	
Flat Canyon (SP)	Middle Hollow	(West Side)	
Gypsum			
Year 2			
Plateau	New Antelope	New Antelope	Rocky Ford
Junction	(Antelope Valley)	(Antelope Valley)	River
New Elbow	(Long Flat)	(Long Flat)	Hunter Spring
(Durfee)	New Elsinore	Maple Canyon	Hunt
(Elbow)	(Flat Canyon, NS)	New Elsinore	Hop Creek
(Ten Mile)	(Magleby)	(Flat Canyon)	Hodge Ranch
Red Canyon	Junction	(Magleby)	Gunnison Valley
Chicken Coop	Poulson	Junction	East Piute
Axhandle	Rick's Pasture	Poulson	East Bench
New Elsinore	River	Rick's Pasture	Denmark
(Flat Canyon, NS)	Timber Canyon	River	Burrville
Magleby	Rocky Ford	Timber Canyon	Angle Bench
New Narrows	Rock Canyon	Rocky Ford	Axhandle
(Box Creek)	Plateau	Rock Canyon	Bear Valley
(Burrville)	New Sand Ledges	Plateau	Indian Hollow
(Greenwich Cr.)	(Lost Creek)	New Sand Ledges	Junction
(Koosharem Cr.)	(Sand Ledges)	(Lost Creek)	Monroe Coop
(North Narrows)	New Otter Creek	(Sand Ledges)	South Narrows
(South Narrows)	(Angle Bench)	New Otter Creek	South Valley

(continued)

APPENDIX II-6 (continued)

Alternative A	Alternative B	Alternative C	Alternative F
New Rough Canyon	(Dry Wash)	(Angle Bench)	Rock Canyon
(Dry Hill)	(East Bench)	(Dry Wash)	
(Rough Canyon)	(Hodge Ranch)	(East Bench)	
Sanpitch North	New Monroe Coop	(Hodge Ranch)	
	(Monroe Coop)	New Monroe Coop	
	(Parson Mills)	(Monroe Coop)	
		(Parson Mills)	
Year 3			
Under-the-Rim	New Narrows	New Narrows	Sanpitch North
New Fishlake	Box Creek	Box Creek	Sanpitch South
(Fishlake	(Burrville)	(Burrville)	Rick's Pasture
(Oak Spring)	(Greenwich Cr.)	(Greenwich Cr.)	Pearson-Lewis
South Valley	(Hatch Canyon)	(Hatch Canyon)	North Narrows
Apple Spring	(Koosharem Cr.)	(Koosharem Cr.)	Maple Canyon
Denmark	(North Narrows)	(North Narrows)	Kingston Canyon
Fayette Cattle	(South Narrows)	(South Narrows)	Fishlake
Hayes Canyon	New N. Cove Mtn.	New N. Cove Mtn.	East Fork
Hop Creek	(N. Cove Mtn.)	(N. Cove Mtn.)	Canal
New Lone Cedar	(Sall's Meadow)	(Sall's Meadow)	Cedar Grove
(Lone Cedar)	(Washburn)	(Washburn)	Elbow
(Swedes Canyon)	New Gunnison	New Gunnison	Gypsum
(West Side)	(Axtell)	(Axtell)	Little Valley
New Otter Creek	(Gunnison Valley)	(Gunnison Valley)	North Hollow
(Angle Bench)	(Mayfield Cattle)	(Mayfield Cattle)	Red Canyon
(Dry Wash)	(Sanpitch South)	(Sanpitch South)	Rough Canyon
(East Bench)	(Twelve Mile)	(Twelve Mile)	Wood Hollow
(Hodge Ranch)	New Fishlake	New Fishlake	West Side
Aurora	(Fishlake)	(Fishlake)	Under-the-Rim
Little Valley	(Oak Spring)	(Oak Spring)	
New Twist	New Elbow	New Elbow)	
(Canal)	(Durkee)	(Durkee)	
(Twist)	(Elbow	(Elbow	
	(Ten Mile)	(Ten Mile)	
Year 4			
River	New Dry Lake	New Dry Lake	Unita
Maple Canyon	(Dry Lake)	(Dry Lake)	Twist
New Antelope	(Manning Cr.)	(Manning Cr.)	Timber Canyon
(Ant. Valley)	Hunter Spring	Hunter Spring	Ten Mile
(Long Flat)	Gypsum	Gypsum	Tate
Cedar Grove	Cedar Grove	Cedar Grove	Swedes Canyon
Hunter Spring	Aurora	Aurora	Plateau
New Dry Lake	Bear Valley	Bear Valley	Parson Mills
(Dry Lake)	East Piute	East Piute	N. Cove Mtn.
(Manning Cr.)	New Pearson-Lewis	New Pearson-Lewis	Middle Hollow
New Gunnison	(Pearson-Lewis	(Pearson-Lewis)	Magleby
(Axtell	(P-Hill)	(P-Hill)	Long Flat

(continued)

APPENDIX II-6 (concluded)

Alternative A	Alternative B	Alternative C	Alternative F
(Gunnison Valley)	New Twist	New Twist	Lone Cedar
(Mayfield Cattle	(Twist)	(Twist)	Jones
(Sanpitch South	(Canal)	(Canal)	Hayes Canyon
(Twelve Mile)	Piute	Piute	Flat Canyon (SP)
New Pearson-Lewis	Wilson Dump	Wilson Dump	Flat Canyon (NS)
(Pearson-Lewis)	Unita	Uinta	Fayette Cattle
(P-Hill)	Ogden	Ogden	Durkee
North Hollow	North Hollow	North Hollow	Chicken Coop
Piute Dam	New Marysvale	New Marysvale	
Bear Valley	(Deer Flat)	(Deer Flat)	
New East Fork	(Marysvale)	(Marysvale)	
(Cannon-Whitaker	(Tate)	(Tate)	
(East Fork)			
<u>Year 5</u>			
Indian Hollow	New East Fork	New East Fork	Apple Spring
Kingston Canyon	(East Fork)	(East Fork)	Antelope Valley
New Marysvale	(Cannon-Whitaker)	(Cannon-Whitaker)	Washburn
(Deer Flat)	Kingston Canyon	Kingston Canyon	P-Hill
(Marysvale)	Joseph	Joseph	Marysvale
(Tate)	Jones	Jones	Dry Hill
Ogden	Indian Hollow	Indian Hollow	Deer Flat
Rock Canyon	Hunt	Hunt	Cannon-Whitaker
Rocky Ford	Hayes Canyon	Hayes Canyon	Aurora
Timber Canyon	Chicken Coop	Chicken Coop	Manning Creek
Uinta	Apple Spring	Apple Spring	

APPENDIX II-7

CULTURAL RESOURCES

MEMORANDUM OF UNDERSTANDING

MOUNTAIN VALLEY GRAZING MANAGEMENT ENVIRONMENTAL IMPACT STATEMENT

BETWEEN

THE BUREAU OF LAND MANAGEMENT

AND

THE UTAH STATE

HISTORIC PRESERVATION OFFICER

I. PURPOSE

The Bureau of Land Management, hereinafter referred to as the Bureau, is preparing the Mountain Valley Grazing Management Environmental Impact Statement (Mountain Valley EIS) under the provisions of the National Environmental Policy Act of 1969. The Bureau has determined that cultural values could be damaged or lost as a result of actions proposed in the Mountain Valley EIS. The following kinds of actions are proposed on public lands administered by the Bureau:

a. Pipeline construction
b. Reservoir construction
c. Fenceline construction
d. Vegetation Modification (e.g., chaining)

The Utah State Historic Preservation Office, hereinafter referred to as the State, is interested in assuring that cultural values in Utah be protected. The Bureau and the State have consulted and agree as to the measures, outlined in this agreement, which should be undertaken to protect these values should authorization be granted to use public lands in Utah administered by the Bureau for the purpose of any of the above mentioned proposed actions. In

(continued)

this agreement, "cultural resources" means data and sites which have archaeological, historical, architectural, or cultural importance and interest.

Investigators will be qualified to evaluate these "cultural resources." Qualifications of investigators will be submitted to the State Historic Preservation Officer.

II. AUTHORITY

This agreement is authorized under the Federal Land Policy and Management Act of 1976 and the National Historic Preservation Act of 1966. It is in accord with Bureau policies and programs. It does not abrogate nor amend any other agreement between the Bureau and the State.

III. RESPONSIBILITIES AND PROCEDURES

The Bureau will comply with 36 CFR 800 in identifying sites which are listed in or eligible for inclusion in the National Register of Historic Places.

A. As part of the planning and environmental analysis required prior to major grazing management decisions, the Bureau will search for archaeological and historical literature concerning the Mountain Valley area. Literature and records searches have been conducted for all public lands that would be affected by the Mountain Valley proposal.

B. After completing the planning and environmental analysis process, should the proposed management be implemented, the Bureau will inform project participants of, monitor compliance with, and enforce the following stipulations:

(continued)

1. Prior to initiation of ground-disturbing activites, literature searches and intensive surveys will be undertaken on all areas which would be disturbed.

2. Wherever possible and feasible, cultural resources will be avoided by construction and related activities. This will be accomplished mainly by regulating vegetation modification activities and adjusting the location of other facilities such as pipelines and fences. Significant cultural resources facing inundation due to proposed reservoir construction will be salvaged to recover data that would otherwise be lost.

3. A professional archaeologist may be required to be present when ground-disturbing operations are underway.

4. Subsurface cultural resources that are encountered during any construction will be salvaged if there is no other recourse in such a situation.

C. Wherever it is not possible and feasible to avoid sites that contain cultural values, the Bureau will consult with the State to determine the most satisfactory means of mitigating damage, as required by 36 CFR 800.

D. The Bureau will provide cultural resource reports, technical reports, and other pertinent material to the State.

(continued)

F. The attached list identifies the specific actions that the Bureau anticipates will be included in the Parker Mountain ES. The list may be brought up to date, as necessary, without amending this agreement in any way.

IV. IMPLEMENTATION

A. This agreement will become effective on the date of the last signature on this agreement.

B. Either party may request revision or cancellation of this agreement by written notice, not less than 30 days prior to the time when such action is proposed.

C. Any problems resulting from this agreement which cannot be resolved by the Bureau and the State will be referred to the Secretary of the Interior and the Advisory Council on Historic Preservation for resolution.

Jan 21, 1980
Date

Utah State Director
Bureau of Land Management
Department of the Interior

Jan. 29, 1980
Date

Utah State Historic Preservation Officer

APPENDIX III-1

Vegetation Communities of the Mountain Valley Planning Area

The vegetation communities found in the Mountain Valley Planning Area are described in the following table. They are typical of the middle latitude, dry climate region of the west. Sagebrush and pinyon-juniper species occupy 83 percent of the area. There are ten major vegetation communities within the planning area. Considerable variation exists within the major communities as to plant composition, vegetation density, production, and potential. These differences are largely due to differences in climate, soil factors, exposure (aspect), slope, fire, past land treatment and uses. These have all found expression in the present vegetation.
The following table shows the major vegetation communities by acre, percent, and characteristics of each with associated species.

TABLE A

Vegetation Communities

Vegetation Community	Acres	Percent of Total	Community Composition and Common Associated Species	Community Characteristics
1. Pinyon-juniper	203,284	41	Utah juniper (Juniperus osteosperma), pinyon pine (Pinus edulis), big sagebrush (Artemisia tridentata), black sagebrush and other low-growing sagebrush (Artemisia nova, A. arbuscula), oakbrush (Quercus gambelii), mountain mahoganies (Cercocarpus montanus, C. ledifolius, C. intricatus), shadscale (Atriplex confertifolia), green ephedra (Ephedra viridus), cliff rose (Cowania stansburiana); grasses, Indian ricegrass (Oryzopsis hymenoides), bluebunch wheatgrass (Agropyron spicatum), squirreltail (Sitanion hystrix), Sanberg bluegrass (Poa secunda), western wheatgrass (Agropyron smithii), cheatgrass (Bromus tectorum); and forbs, bur buttercup (Ranunculus testiculatus), mustards (Descurainia pinnata and Chorispora tenella), phlox (Phlox longifolia) and several other forbs, including many annuals. Bitterbrush (Purshia tridentata), needlegrasses (Stipa comata and S. lettermani), three awn grass (Aristida longiseta), sand dropseed (Sporobolus cryptandrus), and blue grama (Bouteloua gracilis).	This community occupies the foothills and lower mountain slopes within the 9 to 15 inch rainfall zone at elevations of 5,000 to 8,000 feet mean sea level (msl). Soil associations occupied by pinyon and juniper are listed in Appendix III-3. These soils generally occupy hills and low mountain slopes, and are in texture classes varying from sandy to clay loams, having a high percentage of cobbles, rock, and gravel at the surface. Soil depths vary from shallow to moderately deep with $CaCO_3$ horizons, 10-20 inches; pH values vary from 5.6 to 8.4. Under more "pristine" conditions, it is generally believed that pinyon and juniper trees occupied the more shallow, rockier soils of the steeper slopes and broken hills lands. Pinyon-juniper appears to have extended its boundaries, and the tree canopy has become more closed, thus reducing the space occupied by desirable undergrowth of browse, grass, and forbs (Cronquist et al., 1972; Plummer et al., 1968).
2. Sagebrush	211,200	42	Big sagebrush (Artemisia tridentata) and low-growing forms of sagebrush, including black sagebrush (Artemisia nova and Artemisia arbuscula), rabbitbrush (Chrysothamnus viscidiflorus, C. viscidiflorus stenophyllus, and C. nausceosus). Most of the same species found in the understory of the pinyon-juniper type are also found in the sagebrush. Important grasses include Indian ricegrass, needle-and-thread, bluebunch wheatgrass, Sandberg bluegrass, western wheatgrass, and squirreltail. Blue grama and galleta grass, Letterman needlegrass (Stipa lettermani), sheep fescus (Festuca ovina).	This community occupies the foothills and valley lowlands at elevations of 5,400 to about 8,000 ft. msl. The precipitation zone is between 8 to 18 inches. Sagebrush occupies a greater part of the cover (Cronquist et al., 1972). Sagebrush and other brush species comprise 60 to 90 percent of the stand. Protected sites indicate that sagebrush probably occupied less than 15 percent of the cover of the sites of good soil development and favorable moisture regime (Cronquist et al., 1972; Plummer et al., 1968). Rabbitbrush, pinyon, and juniper have invaded or expanded within the site. Soil associations are semidesert shallow shale, and semidesert loam, desert hard pan, stony loam, and gravelly loam, respectively. Other associations are semidesert shallow loams, stony loams, gravelly loams, and limy loams. There are also upland loams.
3. Saltbush	34,000	7	Shadscale (Atriplex confertifolia) and four-winged saltbush (Atriplex canescens) primarily dominate the site. Winterfat (Ceratoides lanata) and other salt desert shrubs exist. The important grasses are sand dropseed (Sporobolus cryptandrus), Indian ricegrass (Oryzopsis hymenoides), alkali sacaton (Sporobolus airoides), galleta (Hilaria jamesii), squirreltail (Sitanian hystrix), and needle-and-thread (Stipa comata).	This community occupies the saline valley areas generally below but overlapping the sagebrush zone. It is in an area of low moisture below 6,000 feet msl, where average annual precipitation is less than 10 inches. Soil associations are semidesert loams, alkali, limy loams, shales, shallow shale, hard pan, and gravelly loams.
4. Greasewood	4,000	1	Greasewood (Sarcobatus vermiculatus), in mixed and pure stands. Associated species are bud sage (Artemisia spinescens), shadscale (Atriplex confertifolia), salt grass (Distichlis spicata), halogeton (Halogeton glomeratus), poverty sumpweed (Iva axillaris), summer cypress (Kochia americana), Russian thistle (Salsola kali), alkali sacaton (Sporobolus arioides), pickleweed (Allenrolfea occidentalis).	This community is the most salt tolerant. It occurs in the valley bottoms in saline clay soils around the margins of playas. It has the least number of species in the association and generally occupies areas where the water table is high for at least part of the year. Annual precipitation is low, approximately between 5 to 10 inches. Elevations are generally 4,500 to 5,500 feet msl.
5. Desert Shrub	2,000	0.5	Winterfat or white sage (Ceratoides lanata), big sagebrush (Artemisia tridentata), shadscale (Atriplex confertifolia), fourwing saltbush (Atriplex canescens), greasewood (Sarcobatus vermiculatus), rabbitbrush (Chrysothamnus nauseosus), snakeweed (Xanthocephalum sarothrae), spinyhop sage (Grayia spinosa), horsebrush (Tetradymia spp.), little rabbitbrush (Chrysothamnus viscidiflorus), Indian ricegrass (Oryzopsis hymenoides), sand dropseed (Sporobolus cryptandrus), alkali sacaton (Sporobolus airoides), galleta (Hilaria jamesii), three awn grass (Aristida spp.), and m[illegible] of the forbs that exist in the greasew[illegible]nd saltbush communities.	This community occupies the areas at about the same elevations and annual precipitation zone as the greasewood community. However, it is typically dominated by low, widely spaced, more or less spiny, grayish, small-leaved shrubs. Annual precipitation is about 6 to 10 inches and elevation is 4,500 to 5,000 ft msl. Soil associations are usually nonsaline, often sandy soils. Sometimes rainfall is below 6 inches.

(continued)

APPENDIX III-1, TABLE A (concluded)

Vegetation Community	Acres	Percent of Total	Community Composition of Common Associated Species	Community Characteristics
6. Mountain Brush	15,000	3	Curlleaf mahogany (Cercocarpus ledifolius), littleleaf mahogany (Cercocarpus intricatus), birchleaf mohogany (Cercocarpus montanus), Gamble or Utah oak brush (Quercus gambelii), bitterbrush (Purshia tridentata), cliff rose (Cowania stansberiana), serviceberry (Amelanchier alnifolia). These plants are found as dominant in nearly pure stands or in various combinations of mountain brush types. They are also intermixed with big sagebrush and pinyon-juniper types. Grasses and forbs found in the mountain brush community are similar in combination and types found in the big sagebrush and pinyon-juniper types.	This plant community occupies the elevation range between 7,000 and 8,500 feet; the annual precipitation zone ranges between 15 and 20 inches. Soils associated with this community are upland loam, stony loam, and gravelly loam. These soils are generally deeper and more fully developed than are soils in the pinyon-juniper and sagebrush types. The general characteristic is foothill topography below the conifer and aspen zone.
7. Grass	16,000	3	Crested wheatgrass (Agropyron desertorum), intermediate wheatgrass (Agropyron intermedium), stiff hair wheatgrass (Agropyron pubesceus), Russian wildrye (Elymus junceus), smooth brome (8romus inermus), alfalfa (Medicago sativa), yellow sweet clover (Melilotus officinalis). These above species are introduced as seedlings for range rehabilitation. They occupy 60 to 90 percent of this type. In addition, native grasses, forbs, and	The grass community occupies the climatic zone of about 5,400 to 8,000 feet elevation in msl. The precipitation zone is between 8 and 18 inches. The natural grassland associations occupy the lowermost elevations with rainfall of 8 to 10 inches annual precipitation. Soils are generally those that support the pinyon-juniper and sagebrush communities.
7. Grass (continued)			shrubs are associated with the seedlings and are similar to those found in the pinyon-juniper and sagebrush communities. Natural grasslands are in blue grama (Bouteloua gracilis), Indian ricegrass (Oryzopsis hymenoides), sand dropseed (Sporobolus cryptandrus), and squirreltail (Sitanian hystrix).	
8. Conifers and Aspen	2,000	0.5	Aspen (Populas tremuloides), white fir (Abies concolor), and Douglas fir (Pseudotsuga menziesii). This is a small community in the planning area.	This small community occupies the higher elevations 8,000 to 9,000 feet msl on the west face of Parker Mountain and in the higher elevations and north-facing slopes in Sanpete County. Precipitation ranges from 15 to 18 inches. Soil associations most common are upland loams, stony loams, and gravelly loams.
9. Annuals	12,000	2	These areas are generally the sagebrush and shadscale community types that are presently dominated by cheatgrass (Bromus techtorum), Russian thistle (Solsola kali), Eriogonim (spp.), and other annuals.	This community occupies about the same elevations and precipation zones as the sagebrush and shadscale communities. Soil associations are also generally the same. This community has an annual vegetation type because of fire and overuse. Change in this type is slow because annuals are so prolific in reproduction.
10. Riparian	488	<1	This is the vegetation community along streams and around water areas consisting of willows (Salix, spp.), blue grasses (Poa spp.), cottonwood (Populus, spp.), river birch (8etula, spp.), river elder (Alnus, spp.), red top (Arrostis, spp.), sedges (Carex, spp.), rushes (Juncus, spp.), rabbitbrush (Chrysothamnus, spp.), sagebrush (Artemisia, spp.), tamarisk (Tamarix, spp.), and others.	This community occupies communities where water is present as streams, lakes, or wetlands. The soils in riparian areas are generally the same as that association existing along the water body or wetland. The climate, likewise, is the same that exists throughout the other vegetation communities. This community is least affected by the climate.
Totals	499,972	100		

APPENDIX III-2

Explanation of Range Condition and Trend

In the Mountain Valley Planning Area, the Soil Conservation Service (SCS) method of determining range condition and trend was used. The SCS method of interpreting range condition is based on an objective ecological approach. (Current range condition and trend are given in Appendix I-1.) The following are criteria used in this approach that must be recognized.

(a) Each species of a climax plant community has its ecological niche and inherent functions in that community.

(b) Range sites are differentiated on the basis of significant differences in kind, proportion, or amount of plant species in the plant community, regardless of their value for any specific purpose.

(c) Range condition is determined by comparing existing plant communities with the presumed climax plant community for a specific range site, regardless of the value of individual plants or the plant community for specific uses.

(d) Departures from climax, which can result from many causes, can enhance or depreciate the value of the resultant plant community for various uses.

(e) Determining range site and range condition does not automatically establish grazing value. Grazing values of range sites and range condition classes must be established for management units by evaluating the results of actual grazing use.

(f) If grazing of the climax plant community on a specific range site is constantly subjected to moderately heavy use, the response of individual plant species depends on the kind of grazing animal and the season of use. A species that decreases if a range is grazed by cattle in spring may increase if the range is grazed by deer or by sheep.

(g) An abnormal amount of any species, compared with the amount in the climax, represents a change in range condition, regardless of the value of the species for any specific use.

Range Condition

"Range condition is the present state of vegetation of a range site in relation to the climax (natural potential) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the climax plant community for the site. Range condition is basically an ecological rating of the plant community. Air-dry weight is the unit of measure used in comparing the composition and production of the present plant community with that of the climax community.

(continued)

Purpose of Determining Range Condition

"The primary purpose of determining range condition is to provide a basis for predicting the extent and direction of changes that can result in the plant community because of specific treatment or management. The range site indicates the potential; range condition represents a starting point for management toward the potential or toward the objective selected by the decisionmaker.

Dynamics of Range Condition

"Plant communities are dynamic. They are ever responding to changes in their environment, to their use, and to stresses to which they are subject. Species change in proportion and amount in the plant community. Climatic cycles, fire, insects, grazing, and physical disturbances are some of the many causes of changes in plant communities. Some changes, such as those resulting from seasonal drought or short-term heavy grazing, are temporary. Other changes are long lasting.

"Individual species or groups of species in the plant community respond in a different manner or degree to the same use or stress. All species in a native plant community are seldom equally palatable to grazing animals. Unless grazing is extremely heavy, some plants are cropped more closely and frequently than others. Most plants are sensitive to stress during some period or stage of growth. They may be severely affected by moderate grazing during short but critical growth periods but tolerant of much heavier use during other times.

"Many plants respond to changes in the microenvironment independently of grazing. The response of some species depends on what happens to their associated species. Some kinds of plants are destroyed by fire, but others thrive and grow quickly following a fire. The same weather conditions may favor the growth of one species in a plant community but be unfavorable for another in the same plant community. A growing season in which frequent light showers occur, for example, may be ideal for shallow-rooted species but not for associated deep-rooted species, which depend upon deep soil moisture. Thus, many complex factors contribute to changes in the composition of plant communities. Not all changes are related to grazing by livestock.

"Plants are sometimes grouped or classed on the basis of their response to specific kinds of stress. For example, climax plants that respond quickly to continued grazing misuse by decreasing are called decreasers. Species that respond to misuse, at least initially, by increasing in relation to other plants in the community are called increasers. Under certain kinds of disturbance, plants that are not a part of the original plant community invade and may become prominent and persistent. These plants are called invaders.

"Inasmuch as plants do not always respond in the same manner to different influences, a species may be a decreaser on some range sites but an increaser or an invader on other sites. Even on the same range site, a species may be a decreaser if regularly grazed during one season but an increaser if grazed at a different time. Similar responses may result if plants are grazed by different kinds of animals during the same season.

"The terms decreaser, increaser, and invader are often incorrectly used synonymously with good, fair, and poor when describing the forage value or preference of forage plants. There is a persistent tendency to regard plants

(continued)

that have low grazing value or that are undesirable for other reasons as invaders, even when they are valid climax species.

"The system of classifying plants as decreasers, increasers, and invaders is sometimes useful in explaining the species changes that take place in plant communities and in predicting changes likely to take place under alternative resource uses.

Trend in Range Condition

"A correct interpretation of trend, the direction of change in range condition, is one of the most important parts of a rangeland resource inventory. The present ecological range condition rating alone does not indicate whether the plant community is improving or deteriorating in relation to its potential. Trend is a separate determination that is necessary for assessing what is currently happening to the plant community. The present range condition is a result of a sustained trend over a period of time. Trend is a much more sensitive indicator of change than condition. It is important to know the trend when planning the grazing use, management, and treatment needed to maintain or to improve the resource. It is also important to consider the trend when making adjustments in grazing systems. Some characteristics of vegetation and soil that indicate apparent trend in range condition are discussed in the paragraphs that follow.

Composition Changes

"The native plant community, which represents the potential for a range site, is relatively stable, but it is in no sense static. Major changes in the plant composition do not occur, however, unless induced by pronounced disturbances, such as continued close grazing, severe or prolonged drought, or repeated burning. If range condition is declining as a result of continued close grazing, the perennial species most sensitive to damage by grazing decrease. An increase in species of low grazing preference usually indicates a trend toward lower condition, except in areas where the plant cover has been severely depleted and increases of even low-quality plants indicate improvement.

"When disturbances that cause a decline in range condition are corrected, secondary plant succession operates to reestablish the climax plant community for a site. Plants that have declined in amount because of past misuse will increase in time if seed or vegetative parts are still available. In varying degrees, plants that have increased as a result of declining range condition now tend to decrease because of competition with newly reestablished species. Once established, certain woody and some other long-lived perennial plants may persist for a long time.

"The invasion of plants not native to the site indicates a decline in ecological range condition. Such plants may flourish temporarily on localized disturbed areas, however, when the site as a whole is in excellent condition. In addition, some invaders, particularly annuals, may flourish temporarily in favorable years, even when range condition is improving. A significant, though temporary, increase in annuals and short-lived perennials may also occur during a series of wet years, even though the general trend in condition is upward.

"Changes in plant composition, whether from declining or improving range condition, generally follow a pattern. All changes in amount of species are

(continued)

not predictable, but successional patterns for specific sites, climates, and grazing use can be predicted.

Abundance of Seedlings and Young Plants

"Changes in a plant community largely depend on successful reproduction of the individual plants on the site. Successful reproduction is evidenced by young seedlings, plants of various ages, and spread by tillers, rhizomes, stolons, and similar methods of propagation. The extent to which any of these types of reproduction occurs varies according to the growth habits of the individual species, site characteristics, current growing conditions, and use which the plant is subject.

"Except in areas of near-climax condition where it is difficult for seedlings to become established, the age-class distribution of plants is an important indicator of changes in the plant community. If all the plants of an important species attractive to grazing animals are old or decadent, the species is declining in amount. A significant number of seedlings and young plants of this species, however, usually indicates an improving trend.

Plant Residues

The extent to which plant residues accumulate depends primarily on the production level of the plant community; the amount of plant growth removed by grazing, fire, insects, wind, or water; and the amount of plant residues may be so great that there is little or no net accumulation. Conversely, in cold climates decomposition is slow. In using plant residues to judge trend in range condition, careful consideration should be given to the level of accumulation that can be expected for the specific range site, plant species, and climate.

"Excessive grazing, below-normal production, recent fires, and abnormal losses caused by wind or water erosion may result in an accumulation of plant residues below that considered reasonable for the site. In the absence of these factors, progressive accumulation of plant residues usually indicates improving range condition. Residues, however, may accumulate rapidly for some kinds of plants, especially woody species or annuals, when they exceed the characteristic amount for the climax plant community. Such accumulations of residues are not an indication of improving range condition.

Plant Vigor

"Plant vigor is reflected primarily by the size of a plant and its parts in relation to its age and the environment in which it is growing. Many plants that form bunches or tufts in a vigorous condition may assume a sod form if their vigor is reduced. Length of rhizomes or stolons is also a good indication of the vigor of a parent plant; these parts are usually fewer and shorter if a plant is in a weakened condition. An increase in the vigor of major forage species and other plants that are highly preferred by grazing animals usually indicates improving range condition.

(continued)

APPENDIX III-2 (concluded)

Condition of the Soil Surface

"Unfavorable conditions of the soil surface may significantly affect trend in range condition. If plants and plant residues are lacking on the surface of the soil, splash erosion and crusting occur.

"Crusting impedes water intake, inhibits seedling establishment and vegetative propagation, and induces high surface temperatures. These conditions, in turn, increase rates of water runoff and soil loss; reduce effective soil moisture; and generally result in unfavorable plant, soil, and water relationships. Improvement in the plant cover following good management is delayed if such soil conditions exist. Bare ground, soil crusting, stone cover, compaction from trampling, plant hummocking, or soil movement may indicate a trend in range condition. These indicators, however, are often misleading. Most of them occur naturally under certain circumstances. For example, plant hummocking is natural on silty soils that are subject to frost heaving. Some range sites do not support a complete plant cover. Bare ground, crusting, stones on the soil surface, and localized soil movement may be completely normal. Even when induced by misuse, the soil surface trend indicators are not nearly as sensitive as those of changes in the plant cover.

"Soil changes always lag plant changes, whether condition is improving or declining. Severe changes in soil surface conditions are positive indicators of past misuse but to wait for these factors to appear is to conduct a post mortem evaluation.

"The relative importance of the trend factors discussed vary in accordance with differences in vegetation, soils, and climate. Evaluating any one on a range site may indicate whether range condition is improving or declining. A more sound evaluation of trend, however, can be ascertained if all or several of the factors are considered in their proper relation to each other." (SCS National Range Handbook, 1976.)

APPENDIX III-3

Existing Soil Descriptions

The following table gives a general description of soil characteristics and limitations found in the Mountain Valley Planning Area. It does not include all information in the URA Step 2; however, there is sufficient data provided to reach a sound management decision. The association number given serves as a key for obtaining more detailed information from the URA Step 2. Other categories are explained in the footnotes as needed.

(continued)

APPENDIX III-3, TABLE A (continued)

TABLE A

Existing Situation Soils Description

Allotment	Association Number[a]	Land Form	Range Sites[b]	Hydrologic Group[c]	Sediment Yield[d]	Drainage[e]	Grazing Limitations[f]	Seeding/Chaining Limitations[f]
Angle Bench	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stony and loams.	D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	233	Valleys, alluvial fills, benches, hills.	Semidesert limy loam, stony loam	D	Low to moderate	Well drained.	Slight	Moderate to severe
	236	Mountains and canyon slopes.	Upland stony loam, Gravelly loam, shallow loam, waste.	B&C	Moderate	Well to somewhat excessively drained.	Moderate	Moderate to severe
Antelope Valley	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stony and limy loam.	D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	211	Very steep hills.	Upland stony loam, shallow loam.	B	Moderate to high	Well drained.	Moderate	Slight to moderate
	218	Small hills, alluvial fans, and flood plains.	Lower Sevier, upper Sevier.	B	Moderate to high	Well to moderately well drained.	Slight	Moderate
Apple Spring	209	Foothills.	Deep and moderately deep. Fine and moderately fine textures.	C	Moderate	Moderately well drained.	None	Slight
Aurora	222	Hills and alluvial fans.	Upland loam, upland gravelly loam, uplands.	C	Moderate to high	Well to moderately well drained.	None	Slight
	235	Alluvial fans.	Semidesert gravelly stony loam.	B	Low to moderate	Well to somewhat excessively well drained.	Slight	Moderate
Axhandle	211	Very steep hills.	Upland stony loam, shallow loam.	B	Moderate to high	Well drained.	Moderate	Slight to moderate
	214	Slopes 10-70 percent, mostly 10-35 percent.	Mountain stony loam, mountain loam, mountain shallow loam.	B&C	Low to moderate	Well drained.	Moderate	Slight to moderate
Axtell	201	Alluvial fans and floodplains.	Mostly medium-moderately fine to moderately coarse soils. Semidesert alkali flat, semidesert loam, semidesert limy loam.	B	Low to moderate	Well drained.	No data	None
	203	Slopes 1-10 percent.		C	Low	Well to moderately well drained.	Slight	Moderate to severe.
Bear Valley	222	Hills, alluvial fans, and some canyon slopes.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
	226	Mountain slopes.	Upland loam, upland gravelly loam.	C	Moderate	Well drained.	None	Moderate
Box Creek	222	Hills, alluvial fans, and some canyon slopes.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
Burrville	222	Hills, alluvial fans, and some canyon slopes.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
	226	Mountain slopes.	Upland loam, upland gravelly loam.	C	Moderate	Well drained.	None	Moderate
Canal	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
Cannon-Whitaker	236	Mountain and canyon slopes.	Upland shallow stony loam.	B&C	Moderate	Well to somewhat excessively drained.	Moderate	Moderate to severe
Cedar Grove	226	Mountain slopes.	Upland loam, upland gravelly loam.	C	Moderate	Well drained.	None	Moderate
Chicken Coop	131	Rounded hills and deep drainages.	No data.	C&B	Moderate	Well drained.	No data	No data
	201	Flood plains.	Medium-moderately fine to moderately coarse textured soils.	B	Low to moderate	Well drained.	No data	None
	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
	234	Shale hills 30-70 percent slopes.	Semidesert shale, semi-desert shallow shale.	--	No data	No data.	No data	No data
Oeer Flat	237	Hills, benches, fans, slopes 20-30 percent.	Semidesert shallow loam, stony loam or gravelly loam.	B	Low to moderate	Well to somewhat excessively drained.	Slight	Moderate to severe
Oenmark	211	Very steep hills.	Upland stony loam, shallow loam.	B	Moderate to high	Well drained.	Moderate	Slight to moderate
	222	Hills, alluvial fans, and some canyon slopes.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
	235	Alluvial fans.	Semidesert gravelly stony loam.	B	Low to moderate	Well to somewhat excessively well drained.	Slight	Moderate

(continued)

APPENDIX III-3, TABLE A (continued)

Allotment	Association Number[a]	Land Form	Range Sites[b]	Hydrologic Group[c]	Sediment Yield[d]	Drainage[e]	Grazing Limitations[f]	Seeding/Chaining Limitations[f]
Dry Hill	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Medium to low	Well to somewhat excessively drained.	Slight	Severe
Ory Lake	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	236	Mountain and canyon slopes.	Upland shallow stony loam.	B&C	Moderate	Well to somewhat excessively drained.	Moderate	Moderate to severe
Dry Wash	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	233	Valleys, alluvial fans, benches, hills.	Semidesert limy loam, stony loam.	D	Low to moderate	Well drained.	Slight	Moderate to severe
Durkee	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
East Bench	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	233	Valleys, alluvial fans, benches, hills.	Semidesert limy loam, stony loam.	D	Low to moderate	Well drained.	Slight	Moderate to severe
East Fork	236	Mountain and canyon slopes.	Upland shallow stony loam.	B&C	Moderate	Well to somewhat excessively rained.	Moderate	Moderate to severe
East Piute	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to som what excessively drained.	Slight	Severe
Elbow	233	Valleys, alluvial fans, benches, hills.	Semidesert limy loam, stony loam.	D	Low to moderate	Well drained.	Slight	Moderate to severe
	236	Mountain and canyon slopes.	Upland shallow stony loam.	B&C	Moderate	Well to somewhat excessively drained.	Moderate	Moderate to severe
Fayette Cattle	211	Very steep hills.	Upland stony loam,	B	Low to moderate	Well drained.	Moderate	Slight to moderate
Fishlake	222	Hills, alluvial fans, and some canyon slopes.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
	226	Mountain slopes.	Upland loam, upland gravelly loam.	C	Moderate	Well drained.	None	Moderate
Flat Canyon, North Sevier	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	0	Low to medium	Well to somewhat excessively drained.	Slight	Severe
Flat Canyon, Sanpete	203	Slopes 1-10 percent.	Semidesert alkali flat, semidesert loam, semi-desert limy loam.	C	Low	Well to moderately well drained.	Slight	Moderate to severe
	204	Foothills.	Upland loam, upland gravelly limy loam.	B&C	Moderate	Well to moderately well drained.	Slight	Slight
Greenwich Creek	222	Hills and alluvial fans and some canyon slopes.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
Gunnison Valley	201	Alluvial fans and flood plains.	Mostly medium to moderately fine to moderately coarse soils.	B	Low to moderate	Well drained.	No data	None
	203	Slopes 1-10 percent.	Semidesert alkali flat, semidesert loam, semi-desert limy loam.	C	Low	Well to moderately well drained.	Slight	Severe/Moderate
	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stony and limy loams.	C&D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	239	Alluvial fans and flood plains.	No data.	B	Low	Well to somewhat excessively drained.	No data	No data
Gypsum	222	Hills, alluvial fans, and some canyon slopes.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
	234	Shale hills 3-70 percent slopes.	Semidesert shale, semi-desert shallow shale.	No data	No data	No data.	No data	No data
Hatch Canyon	222	Hills and alluvial fans and some canyon slopes.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
	236	Mountain and canyon slopes.	Upland stony loam, gravelly loam, shallow loam waste.	B&C	Moderate	Well to somewhat excessively drained.	Moderate	Moderate to severe
Hayes Canyon	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam semidesert stony and limy loam.	C&D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
Hodge Ranch	227	High plateaus, mountain slopes, small valleys.	No data.	No data	No data	No data.	No data	No data
	233	Valleys, alluvial fans, benches, hills.	Semidesert limy loam, stony loam.	B&C	Low to moderate	Well drained.	Slight	Moderate to severe
	236	Mountain and canyon slopes.	Upland shallow stony loam.	B&C	Moderate	Well to somewhat excessively drained.	Moderate	Moderate to severe

(continued)

APPENDIX III-3, TABLE A (continued)

Allotment	Association Number[a]	Land Form	Range Sites[b]	Hydrologic Group[c]	Sediment Yield[d]	Drainage[e]	Grazing Limitations[f]	Seeding/Chaining Limitations[f]
Hop Creek	201	Alluvial fans and flood plains.	Mostly medium to moderately coarse soils.	B	No data	No data.	No data	None
	212	Lower mountain slopes and upland slopes.	Upland gravelly loam, shallow loam.	C	Moderate	Moderately well to somewhat excessively drained.	None	Slight
Horse Ridge	211	Very steep hills.	Upland stony loam, shallow loam.	B	Moderate to high	Well drained.	Moderate	Slight to moderate
Hunt	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	233	Valleys, alluvial fans, benches, hills.	Semidesert limy loam, stony loam.	D	Low to moderate	Well drained.	Slight	Moderate to severe
Hunter Spring	222	Hills, alluvial fans, and some canyon slopes.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
Indian Hollow	212	Mountain slopes and upland slopes.	Upland gravelly loam, shallow loam.	C	Moderate	Moderately well to somewhat excessively drained.	None	Slight
Jones	233	Valleys, alluvial fans, benches, hills.	Semidesert limy loam, stony loam.	B&C	Low to moderate	Well drained.	Slight	Moderate to severe
Joseph	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
Junction	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stony and limy loam.	C&D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	233	Valleys, alluvial fans, benches, hills.	Semidesert limy loam, stony loam.	B&C	Low to moderate	Well drained.	Slight	Moderate to severe
	237	Hills, benches, fans, slopes 20-30 percent.	Semidesert shallow loam, stony loam or gravelly loam.	B	Low to moderate	Well to somewhat excessively drained.	Slight	Moderate to severe
Kingston Canyon	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	233	Valleys, alluvial fans, benches, hills.	Semidesert limy loam, stony loam.	D	Low to moderate	Well drained.	Slight	Moderate to severe
Koosharem Creek	222	Hills, alluvial fans, and some canyon slopes.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
Little Valley	211	Very steep hills.	Upland stony loam.	B	Moderate to high	Well drained.	Moderate	Slight to moderate
	235	Alluvial fans.	Semidesert gravelly stony loam.	B	Low to moderate	Well to somewhat excessively well drained.	Slight	Moderate
Lone Cedar	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stony and limy loam.	D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	211	Very steep hills.	Upland stony loam, shallow loam.	B	Moderate to high	Well drained.	Moderate	Slight to moderate
	218	Small hills, alluvial fans.	Lower Sevier, upper Sevier.	B	Moderate to high	Well to moderately well drained.	Slight	Moderate
Long Flat	203	Slopes 1-10 percent.	Semidesert alkali flat, semidesert loam, semi-desert limy loam.	C	Low	Well to moderately well drained.	Slight	Moderate to severe
	211	Very steep hills.	Upland stony loam.	B/D	Moderate to high	Well drained.	Moderate	Slight to moderate
	213	Steep to very steep hills, low mountain slopes.	Semidesert shallow loam, semidesert stony and limy loam.	C&D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
Lost Creek	222	Hills and alluvial fans.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
	235	Alluvial fans.	Semidesert gravelly stony loam.	B	Low to moderate	Well to somewhat excessively well drained.	Slight	Moderate
Magleby	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
Manning Creek	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stony and limy loam.	C&D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	233	Valleys, alluvial fans, benches, hills.	Semidesert limy loam, stony loam.	B&C	Low to moderate	Well drained.	Slight	Moderate to severe
	237	Hills, benches, fans, slopes 20-30 percent.	Semidesert shallow loam, stony loam or gravelly loam.	B	Low to moderate	Well to somewhat excessively drained.	Slight	Moderate to severe
Maple Canyon	211	Very steep hills.	Upland stony loam, shallow loam.	B	Moderate to high	Well drained.	Moderate	Slight to moderate

(continued)

APPENDIX III-3, TABLE A (continued)

Allotment	Association Number[a]	Land Form	Range Sites[b]	Hydrologic Group[c]	Sediment Yield[d]	Drainage[e]	Grazing Limitations[f]	Seeding/Chaining Limitations[f]
Marysvale	237	Hills, benches, fans, slopes 20-30 percent.	Semidesert shallow loam, stony loam or gravelly loam.	B	Low to moderate	Well to somewhat excessively drained.	Slight	Moderate to severe
Mayfield Cattle	201	Alluvial fans and flood plains.	Mostly medium to moderately fine to moderately coarse soils.	B	Low to moderate	Well drained.	--	None
	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stony and limy loams.	C&D	Low to moderate	Moderately well to somewhat excessively drained.	Slight	Severe
Middle Hollow	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stony and limy loams.	C&D	Low to moderate	Moderately well to somewhat excessively drained.	Slight	Severe
	214	Slopes 10-70 percent, mostly 10-35 percent.	Mountain stony loam, mountain loam, mountain shallow loam.	B&C	Low to moderate	Well drained.	None	Slight
Monroe Co-op	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	233	Valleys, alluvial fans, benches, hills.	Semidesert limy loam, stony loam.	D	Low to moderate	Well drained.	Slight	Moderate to severe
N. Cove Mountain	222	Hills and alluvial fans.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
	226	Mountain slopes.	Upland loam, upland gravelly loam.	C	Moderate	Well drained.	None	Moderate
	227	High plateaus, mountain slopes, small valleys.	No data.	No data	No data	No data.	No data	No data
North Hollow	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stony and limy loams.	C&D	Low to moderate	Moderately well to somewhat excessively drained.	Slight	Severe
	214	Slopes 10-70 percent, mostly 10-35 percent.	Mountain stony loam, mountain loam, mountain shallow loam.	B&C	Low to moderate	Well drained.	None	Slight
North Narrows	222	Hills, alluvial fans, and some canyon slopes.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
	236	Mountain and canyon slopes.	Upland stony loam, gravelly loam, shallow loam waste.	B&C	Moderate	Well to somewhat excessively drained.	Moderate	Moderate to severe
Oak Spring	222	Hills, alluvial fans, and some canyon slopes.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
	236	Mountain and canyon slopes.	Upland stony loam, gravelly loam, shallow loam waste.	B&C	Moderate	Well to somewhat excessively drained.	Moderate	Moderate to severe
Ogden	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
P-Hill	237	Hills, benches, fans, slopes 20-30 percent.	Semidesert shallow loam, stony loam or gravelly loam.	B	Moderate to low	Well to somewhat excessively drained.	Slight	Moderate to severe
Parson Mills	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
Pearson-Lewis	237	Hills, benches, fans, slopes 20-30 percent.	Semidesert shallow loam, stony loam or gravelly loam.	B	Low to moderate	Well to somewhat excessively drained.	Slight	Moderate to severe
Piute Dam	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stony and limy loams.	C&D	Low to moderate	Moderately well to somewhat excessively drained.	Slight	Severe
	237	Hills, benches, fans, slopes 20-30 percent.	Semidesert shallow loam, stony loam or gravelly loam.	B	Low to moderate	Well to somewhat excessively drained.	Slight	Moderate to severe
Plateau	226	Mountain slopes.	Upland loam, upland gravelly loam.	C	Moderate	Well drained.	None	Moderate
	242	Rolling and steep mountain slopes 10-30 percent.	Upland gravelly loam, upland stony loam.	B & C	Moderate to high	Well to moderately well drained.	None	Slight
Poulson	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
Red Canyon	211	Very steep hills.	Upland stony loam, shallow loam.	C	Moderate to high	Well drained.	Moderate	Slight to moderate
	235	Alluvial fans.	Semidesert gravelly stony loam.	B	Low to moderate	Well to somewhat excessively well drained.	No data	None

(continued)

APPENDIX III-3, TABLE A (continued)

Allotment	Association Number[a]	Land Form	Range Sites[b]	Hydrologic Group[c]	Sediment Yield[d]	Drainage[e]	Grazing Limitations[f]	Seeding/Chaining Limitations[f]
Ricks Pasture	237	Hills, benches, fans, slopes 20-30 percent.	Semidesert shallow loam, stony loam or gravelly loam.	B	Low to moderate	Well to somewhat excessively drained.	Slight	Moderate to severe
River	201	Alluvial fans and flood plains.	Mostly medium to moderately fine to moderately coarse soils.	B	Low to moderate	Well drained.	No data	None
Rock Canyon	211	Very steep hills.	Upland stony loam, shallow loam.	C	Moderate to high	Well drained.	Moderate	Slight to moderate
	235	Alluvial fans.	Semidesert gravelly stony loam.	B	Low to moderate	Well to somewhat excessively well drained.	No data	None
Rocky Ford	236	Mountain and canyon slopes.	Upland stony loam, gravelly loam, shallow loam waste.	B&C	Moderate	Well to somewhat excessively drained.	Moderate	Slight to moderate
	237	Hills, benches, fans, slopes 20-30 percent.	Semidesert shallow loam, stony loam or gravelly loam.	B	Low to moderate	Well to somewhat excessively drained.	Slight	Slight to moderate
Rough Canyon	211	Very steep hills.	Upland stony loam, shallow loam.	B	Moderate to high	Well drained.	Moderate	Slight to moderate
	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stony and mountain loams.	C&D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
Sall's Meadow	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
Sand Ledges	222	Hills and alluvial fans.	Upland loam, upland gravelly loam.	C	Moderate to high	Well to moderately well drained.	None	Slight
	226	Mountain slopes.	Upland loam, upland gravelly loam.	C	Moderate	Well drained.	None	Moderate
	242	Rolling and steep mountain slopes.	Upland gravelly loam, upland stony loam.	B & C	Moderate to high	Well to moderately well drained.	None	Slight
Sanpitch North	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
Sanpitch South	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
South Hollow	214	Slopes 10-70 percent, mostly 10-35 percent.	Mountain stony loam, mountain loam, mountain shallow loam.	B&C	Low to moderate	Well drained.	None	Slight
South Narrows	233	Valleys, alluvial fans, benches, hills.	Semidesert limy loam, stony loam.	D	Low to moderate	Well drained.	Slight	Moderate to severe
	236	Mountain and canyon slopes.	Upland shallow stony loam.	B&C	Moderate	Well to somewhat excessively drained.	Moderate	Moderate to severe
South Valley	211	Very steep hills.	Upland stony loam, shallow loam.	B	Moderate to high	Well drained.	Moderate	Slight to moderate
	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stoney and limy loams.	C&D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	235	Alluvial fans.	Semidesert gravelly stony loam.	D	Low to moderate	Well drained.	None	Slight to moderate
Swedes Canyon	211	Very steep hills.	Upland stony loam, shallow loam.	B	Moderate to high	Well drained.	Moderate	Slight to moderate
	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stoney and limy loams.	C&D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	235	Alluvial fans.	Semidesert gravelly stony loam.	D	Low to moderate	Well drained.	None	Slight to moderate
Tate	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stony and limy loams.	C&D	Low to moderate	Moderately well to somewhat excessively drained.	Slight	Severe
	237	Hills, benches, fans, slopes 20-30 percent.	Semidesert shallow loam, stony loam or gravelly loam.	B	Low to moderate	Well to somewhat excessively drained.	Slight	Moderate to severe
Ten Mile	233	Valleys, alluvial fans, benches, hills.	Semidesert limy loam, stony loam.	B&C	Low to moderate	Well drained.	Slight	Moderate to severe
Timber Canyon	204	Foothills.	Upland loam, upland gravelly limy loam.	B&C	Moderate	Well to moderately well drained.	None	Slight
	211	Very steep hills.	Upland stony loam, shallow loam.	B	Moderate to high	Well drained.	Moderate	Slight to moderate
	214	Slopes 10-70 percent, mostly 10-35 percent.	Mountain stony loam, mountain loam, mountain shallow loam.	B&C	Low to moderate	Well drained.	None	Slight

(continued)

APPENDIX III-3, TABLE A (concluded)

Allotment	Association Number[a]	Land Form	Range Sites[b]	Hydrologic Group[c]	Sediment Yield[d]	Drainage[e]	Grazing Limitations[f]	Seeding/Chaining Limitations[f]
Twelve Mile	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
Twist	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
Unita	212	Mountain slopes and upland slopes.	Upland gravelly loam, shallow loam.	C	Moderate	Moderately well to somewhat excessively drained.	None	Slight
Under-the-Rim	202	Alluvial valley bottoms and flood plains.	Wet meadows.	D	Low	Moderately well to very poorly drained.	None	Slight to moderate
	211	Very steep hills.	Upland stony loam, shallow loam.	B	Moderate to high	Well drained.	Moderate	Slight to moderate
	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stony/limy loam.	C&D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
Washburn	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
West Side	211	Very steep hills.	Upland stony loam, shallow loam.	B	Moderate to high	Well drained.	Moderate	Slight to moderate
	213	Steep to very steep hills and low mountain slopes.	Semidesert shallow loam, semidesert stoney and limy loams.	C&D	Low to moderate	Well to somewhat excessively drained.	Slight	Severe
	235	Alluvial fans.	Semidesert gravelly stony loam.	D	Low to moderate	Well drained.	None	Slight to moderate
Wilson Dump	213	Steep hills, broken mountain slopes.	Semidesert gravelly shallow loam.	D	Low to medium	Well to somewhat excessively drained.	Slight	Severe
Wood Hollow	201	Alluvial fans and flood plains.	Mostly medium to moderately coarse soils.	B	No data	No data.	No data	None
	212	Lower mountain slopes and upland slopes.	Upland gravelly loam, shallow loam.	C	Moderate	Moderately well to somewhat excessively drained.	None	Slight

[a]Associations. A group of soils geographically associated in a characteristically repeating pattern. This part is based on the fourth association of subgroups, the highest category of classification.

[b]Range Sites. Soils that have the capacity to produce the same kinds, amounts, and proportions of range plants are grouped into range sites. A range site is the product of all environmental factors responsible for its development.

[c]Hydrologic Groups. The hydrologic soil groups are used to estimate runoff from rainfall. Soil properties which are considered are those that influence the rate of infiltration obtained from a bare soil after prolonged wetting. Soil properties considered are:
1) Depth of seasonal high water table;
2) In-take rate and permeability after prolonged wetting;
3) Depth to very slowly permeable layer.

The soils have been classified into four groups, A through D. Group A soils have low runoff potential; Group B soils have moderately low runoff potential; Group C soils have moderately high runoff potential; and Group D soils have high runoff potential.

[d]Sediment Production.
Low - <0.5 acre-feet per square mile per year.
Moderate - 0.5 to 1.0 acre-feet per square mile per year.
High - 1.0 to 3.0 acre-feet per square mile per year.
Very High - >3.0 acre-feet per square mile per year.

[e]Drainage. The relative rapidity and extent of the removal of water from on and within the soil under natural conditions. Terms commonly used to describe drainage are:
- Excessively drained - Water is removed from the soil rapidly. The soils are typically sandy and porous.
- Well drained - Water is removed from the soil readily, but not rapidly. There is no evidence of wetness above a depth of 40 inches.
- Moderately well drained - Water is removed from the soil somewhat slowly so that the soil is wet for short, but significant periods of time.
- Somewhat poorly drained - Water is removed from the soil slowly enough to keep it wet for significant periods, but not all the time. Wetness is apparent between a depth of 20 and 40 inches.
- Poorly drained - Water is removed from the soil so slowly that the water table is near the surface most of the time. Wetness is apparent within 20 and 40 inches.
- Very poorly drained - Water is removed from the soil so slowly that the water table is at or on the surface most of the time. These soils are generally in low areas or depressions.

[f]A rating of None, Slight, Moderate, or Severe is used to show management limitations.

APPENDIX III-4

TABLE A

Water Quality

Water quality standards have been set by the State of Utah to protect waterways for designated uses (Utah Division of Health, 1978). Those set for the Sevier River drainage are:

Classification of Waters of the State	Domestic Source	Recreation and Esthetics		Aquatic Wildlife				Agriculture
	1C	2A	2B	3A	3B	3C	3D	4
SEVIER RIVER DRAINAGE								
Sevier River and tributaries from Gunnison Bend Reservoir to Annabella Diversion except the following tributaries:					X			X
San Pitch River and tributaries, from confluence with Sevier River to Highway U-132 crossing except the following tributaries:						X	X	X
Twelve Mile Creek and tributaries, from Forest Service boundary to headwaters.				X				X
Six Mile Creek and tributaries, Sanpete County				X				X
Manti Creek and tributaries, from Forest Service boundary to headwaters.				X				X
Ephraim Creek and tributaries, from Forest Service boundary to headwaters.				X				X
Fountain Green Creek and tributaries, from Forest Service boundary to headwaters.				X				X
San Pitch River and tributaries, from Highway U-132 crossing to headwaters.				X				X
Sevier River and tributaries, from Annabella Diversion to headwaters.				X				X

(continued)

APPENDIX III-4 (concluded)

TABLE B

Selected Numerical Standards for Protection of Beneficial Uses of Water

Constituent	Domestic Source 1A	Domestic Source 1B	Domestic Source 1C	Recreation & Aesthetics 2A	Recreation & Aesthetics 2B	Aquatic Wildlife 3A	Aquatic Wildlife 3B	Aquatic Wildlife 3C[a]	Aquatic Wildlife 3D	Agri-culture 4	Industry 5[b]	Special 6[b]
Bacteriological (no./100 ml) (30-day Geometic Mean)												
Maximum Total Coliforms	1	50	5,000	1,000	5,000	a	a		a	a		
Maximum Fecal Coliforms	a	a	2,000	200	2,000	a	a		a	a		
Physical												
Maximum Temperature	a	a	a	a	a	20°C	27°C		a	a		
Maximum Temp. Change	a	a	a	a	a	2°C	4°C		a	a		
pH	6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0		6.5-9.0	6.5-9.0		
Turbidity increase[c]	a	a	a	10 NTU	10 NTU	10 NTU	10 NTU		15 NTU	a		
Chemical (Maximum mg/ℓ)												
NH_3 as N (un-ionized)	a	a	a	a	a	.02	.02		a	a		
NO_3 as N	10	10	10									
TDS[d]	a	a	a	a	a	a	a		a	1,200		
Pesticides (Maximum μg/ℓ)												
Endrin	0.2	0.2	0.2	a	a	0.004	0.004		0.004	a		
Lindane	4	4	4	a	a	0.01	0.01		0.01	a		
Methoxychlor	100	100	100	a	a	0.03	0.03		0.03	a		
Toxaphene	5	5	5	a	a	0.005	0.005		0.005	a		
2,4-D	100	100	100	a	a	a	a		a	a		
2,4,5-TP	10	10	10	a	a	a	a		a	a		
Pollution Indicators[e]												
BOD (mg/ℓ)	a	a	5	5	5	5	5		5	5		
NO_3 as N (mg/ℓ)	a	a	a	4	4	4	4		a	a		
PO_4 as P (mg/ℓ)[f]				0.05	0.05	0.05	0.05		a	a		

[a]Insufficient evidence to warrant the establishment of numerical standard. Limits assigned on case-by-case basis.

[b]Standards will be determined on a case-by-case basis.

[c]For Classes 2A, 2B, 3A, and 3B at background levels of 100 NTUs or greater, a 10-percent increase limit would be used instead of the numeric values listed. For Class 3D at background levels of 150 NTUs or greater, a 10-percent increase limit will be used instead of the numeric value listed. Short-term variances may be considered on a case-by-case basis.

[d]Total dissolved solids (TDS) limit may be adjusted on a case-by-case basis.

[e]Investigations should be conducted to develop more information where these pollution indicator levels are exceeded.

[f]PO_4 as P(mg/ℓ) limit for lakes and reservoirs shall be 0.025.

APPENDIX III-5

Methodology Used to Derive Wildlife Habitat Ratings

This is a general rating system to give the reader a general concept of habitat quality and needs of the five animals in the following table, and is not meant to cover all aspects or details of habitat requirements or needs. For more details, consult available data sources at UDWR Region Office (Provo and Cedar City) files or BLM District libraries or manuals.

ELK

Winter	Summer
Poor - Lack of preferred grass and browse species. Thermal cover limited or absent. Heavy competition with other grazing animals.	Lack of succulent forage species cover and water. Heavy competition with other grazing species. Ecotone limited or absent.
Fair - Preferred grasses and browse species present but in poor condition. Moderate competition with other grazers. Limited ecotone and thermal cover.	Thermal cover present but water, forbs, grasses and succulent browse (young aspen, serviceberry, etc.) present in limited amounts. Competition with other grazers moderate. Ecotone limited.
Good - Preferred grasses and browse present, available in good condition with little or no hedging of browse species. Light competition from other grazing animals.	Thermal cover and water present and well distributed. Forbs, grasses and succulent browse species present and well distributed. Grazing competition light. Ecotone and thermal cover present and well distributed.
Excellent - Preferred food species and cover abundant. Little or no competition from other grazers. Ecotone varied and abundant.	Thermal cover and water abundant and well distributed. Forbs, grasses, and succulent browse species abundant and well distributed. Ecotone prevalent and well developed throughout area. Grazing competition slight to not present.

DEER

Winter	Summer
Poor - Lack of preferred browse species. Existing browse heavily hedged or decadent.	Lack of succulent forage species, cover and water. Heavy competition with other grazing and browsing species. Ecotone absent.

(continued)

Deer (continued)

Fair - Secondary browse species available and lightly used. Preferred browse hedged or lacking.	Thermal cover present but not abundant. Water, forbs, grasses and succulent browse (young aspen, serviceberry, etc.) present in limited amounts. Competition with other grazers and browsers moderate. Ecotone limited.
Good - Preferred browse present, moderately hedged. Secondary species abundant.	Thermal cover and water present and well distributed. Forbs, grasses and succulent browse species present and well distributed. Ecotone prevalent. Grazing and browsing competition light.
Excellent - Preferred browse abundant with light-moderate hedging. Secondary species little used.	Thermal cover and water abundant and well distributed. Forbs, grasses and succulent browse species abundant and well distributed. Ecotone prevalent and well distributed throughout area. Grazing and browsing competition slight to not present.

ANTELOPE

Winter	Summer
Poor - Lack of preferred browse species (bitterbrush, sagebrush, fourwing saltbush). Eexisting browse hedged or decadent.	Succulent forage species and water absent or very limited. Shade cover (brushy draws) absent or limited. Heavy competition with other grazing animals. Lack of brush 9-18" tall for fawning grounds.
Fair - Secondary browse species light use available. Preferred browse heavily hedged or lacking.	Succulent forage species and water available in limited quantity, especially from June to August. Scattered patches of 9-18" in brush and limited brushy draws. Moderate competition for available food and water with other grazing animals.
Good - Preferred browse present and moderately hedged. Secondary species abundant.	Preferred succulent forage and water available and prevalent. Prevalent patches or draws with 9-18" browse for fawning and resting during heat of day. Light competition from other grazing animals.

(continued)

Antelope (continued)

Excellent - Preferred browse abundant with light to moderate hedging. Secondary species little used.	Food, cover and water abundant. Competition from other grazing animals slight to absent.

SAGEGROUSE

Winter	Summer
Poor - Lack of preferred browse species (sagebrush). Existing browse hedged or decadent.	Succulent forage species and water absent or very limited. Shade cover (brushy draws) absent or limited. Heavy competition with other grazing animals. Lack of brush 9-18" tall for brooding grounds.
Fair - Preferred browse (sagebrush) heavily hedged or lacking. Secondary browse species light use available.	Succulent forage species and water available in limited quantity, especially from June to August. Scattered patches of 9-18" in brush and limited brushy draws. Moderate competition for available food and water with other grazing animals.
Good - Preferred browse (sagebrush) present and moderately hedged. Secondary species abundant.	Preferred succulent forage and water available and prevalent. Prevalent patches or draws with 9-18" browse for brooding and resting during heat of day. Light competition from other grazing animals.
Excellent - Preferred browse (sagebrush) abundant with light to moderate hedging. Secondary species abundant.	Food, cover and water abundant. Competition from other grazing animals slight to absent.

UTAH PRAIRIE DOG[b]

Early Spring through Summer

Poor - Vegetation too dense or tall. Poorly drained areas. Lack of early spring forage in close proximity to colonies. Heavy livestock use before and during dog emergence. Lack of succulent forage during lactation and prior to dormancy. Lack of grazing keeps vegetation from becoming rank. No water and/or meadows in close proximity to colonies. Soil sand and thus poor for burrow construction.

Fair - Short vegetation. Available forage. Light direct competition from other grazing animals but enough during other periods to keep vegetation in serial stages. Swales present but 1/4 mile or more from colony. Moderate amounts of sand or loamy sand soil.

(continued)

Utah Prairie Dog (continued)

Good - Short, succulent vegetation available in close proximity to burrows. Little or no direct livestock competition during heavy prairie dog use period. Swales or meadows in close proximity to colony. Only small amounts of sand or loamy sand soil.

Excellent - Short succulent vegetation abundant and swales in close proximity to colonies. No direct livestock competition. Very little loamy sand or sand soil to prevent burrow construction.

[b]Prairie dogs are usually dormant during winter, with few above-ground habitat needs. Most critical period is spring and summer.

TABLE A

Habitat Rating of Major Wildlife Species

Allot.	Deer: Season of Use	Deer: Overall Habitat Rating	Deer: Livestock Competition	Antelope: Season of Use	Antelope: Overall Habitat Rating	Antelope: Livestock Competition	Elk: Season of Use	Elk: Overall Habitat Rating	Elk: Livestock Competition	Sagegrouse: Season of Use	Sagegrouse: Overall Habitat Rating	Sagegrouse: Livestock Competition	Prairie Dog: Season of Use	Prairie Dog: Overall Habitat Rating	Prairie Dog: Livestock Competition
Angle Bench	Winter	Poor	H				Winter	Fair	H	Year-long	Poor	M			
Antelope Valley	Winter	Fair-Good	M												
Apple Spring	Winter	Poor-Fair	M												
Aurora	Winter	Poor	H												
Axhandle	Winter	Fair-Good	M-H												
Axtell	(No deer range, UDWR Central Region.)														
Bear Valley	Fall Spring	Fair	L				Winter	Fair	L		Poor	M			
Box Creek	Winter	Poor	H				Winter	Poor	H		Poor	M			
Burrville	Spring	Fair	L				Winter	Fair	M		Poor	M			
Canal	Winter	Poor	L												
Cannon-Whittaker Spring	Winter	Poor	H												
Cedar Grove	Winter	Fair	M	Year-long	Fair	H	Winter	Fair	H	Spring Summer	Fair	M	Spring Summer	Fair	M
Chicken Coop	Winter	Poor	H	Year-long	Poor	M	Winter	Poor	H						
Deer Flat	Winter	Good	O				Winter	Fair	O						
Denmark	Winter	Poor	H												
Dry Hill	Winter	Poor-Fair	M												
Dry Lake	Winter	Poor-Fair	M												
Dry Wash	Winter	Poor	H	Year-long	Fair	H	Winter	Poor	H						
Durkee	Winter	Poor-Fair	H												
East Bench	Winter	Poor	H	Year-long	Fair	H	Winter	Fair	H		Poor				
East Fork	Winter	Poor	H												
East Piute	Winter	Poor	H												
Elbow	Winter	Poor	H												
Fayette Cattle	Winter	Fair-Good	M												
Fishlake	Fall Winter	Fair	H	Spring	Fair	M	Winter	Fair	H	Summer	Fair	L			
Flat Canyon North Sevier	Winter	Poor	H				Winter	Poor	L						
Flat Canyon Sanpete	Winter	Poor-Fair	H												
Greenwich Creek	Winter	Poor	H								Poor				
Gunnison Valley	Winter	Poor	H				Winter	Fair	H						
Gypsum	Winter	Poor	H	Year-long	Poor	H	Winter	Fair	H						
Hatch Canyon	Winter	Poor	H				Winter	Fair	H		Fair				
Hayes Canyon	Winter	Fair-Good	H												
Hodge Ranch	Winter	Poor	H												
Hop Creek	Winter	Poor-Fair	H				Winter	Poor-Fair	H						
Horse Ridge	Winter	Poor-Fair	H												

APPENDIX III-5, TABLE A (continued)

	Deer			Antelope			Elk			Sagegrouse			Prairie Dog		
Allot.	Season of Use	Overall Habitat Rating	Livestock Competition	Season of Use	Overall Habitat Rating	Livestock Competition	Season of Use	Overall Habitat Rating	Livestock Competition	Season of Use	Overall Habitat Rating	Livestock Competition	Season of Use	Overall Habitat Rating	Livestock Competition
Hunt	Winter	Poor	H												
Hunter Spring	Winter	Poor	H												
Indian Hollow	Winter Summer	Poor-Fair	H				Winter Summer	Poor-Fir	H		Poor				
Jones	Winter	Poor	H												
Joseph	Winter	Poor	L												
Junction	Winter	Poor-Fair	H												
Kingston Canyon	Winter	Poor	H												
Koosharem Creek	Winter	Fair	L				Winter	Fair	L						
Little Valley	Winter	Poor-Fair	H												
Lone Cedar	Winter	Fair-Good	H												
Long Flat	Winter	Fair-Good	L												
Lost Creek	Winter	Poor	L	Year-Long	Poor	M	Winter	Poor	M						
Magleby	Winter	Poor	L												
Manning Creek	Winter	Poor	H				Winter	Poor	H						
Maple Canyon	Winter	Fair-Good	None												
Marysvale	Winter	Fair	L				Winter	Fair	M						
Mayfield Cattle	Winter	Fair-Good	H				Winter	Fair-Good	H						
Middle Hollow	Winter	Fair-Good	M												
Monroe Coop	Winter	Fair	H				Winter	Poor	M						
N. Cove Mtn.	Winter	Fair									Fair				
North Hollow	Winter	Fair-Good	L				Winter	Fair-Good	L						
North Narrows	Winter	Fair	M	Year-long	Fair	H	Winter	Fair	M		Poor	M			
Oak Spring	Fall Spring	Fair	L				Winter	Fair	M		Fair	M			
Ogden	Winter	Poor	H				Winter	Poor	H						
P-Hill	Winter	Poor	H				Winter	Poor	H		Poor				
Parson Mills	Winter	Poor	H												
Pearson-Lewis	Winter	Poor	H												
Piute Dam	Winter	Poor	H												
Plateau	Fall Spring	Fair	L				Winter	Poor	L		Poor	M			
Poulson	Fall	Poor	L												
Red Canyon	Winter	Fair-Good	H												
Ricks Pasture	Winter	Poor	H												
River	Winter	Fair-Good	H												
Rock Canyon	Winter	Poor-Fair	M												
Rocky Ford	Winter	Poor	H												

(continued)

APPENDIX III-5, TABLE A (concluded)

	Deer			Antelope			Elk			Sagegrouse			Prairie Dog		
Allot.	Season of Use	Overall Habitat Rating	Livestock Competition	Season of Use	Overall Habitat Rating	Livestock Competition	Season of Use	Overall Habitat Rating	Livestock Competition	Season of Use	Overall Habitat Rating	Livestock Competition	Season of Use	Overall Habitat Rating	Livestock Competition
Rough Canyon	Winter	Poor-Fair	H												
Sall's Meadow	Winter	Poor	H				Winter	Fair	L						
Sand Ledges	Fall Spring	Fair	L				Winter	Fair	H		Poor	M			
Sanpitch North		Poor-air	(No deer use.)												
Sanpitch South	Winter Spring	Poor-Fair	M												
South Hollow	Winter	Fair-Good	L												
South Narrows	Winter	Poor	H	Year-long	Poor	H	Winter	Fair	H		Poor	M			
South Valley	Winter	Fair-Good	M												
Swedes Canyon	Winter	Poor-Fair	H												
Tate	Winter	Poor	M												
Ten Mile	Winter	Poor-Fair	H												
Timber Canyon	Winter	Fair-Good	M												
Twelve Mile	Winter	Fair-Good	M												
Twist	Winter	Poor	L												
Uinta	Winter	Poor-Fair	M				Winter	Poor-Fair	M						
Under-the-Rim	Winter	Fair	M												
Washburn	Winter	Poor	H												
West Side		Fair-Good													
Wilson Dump	Winter	Poor	M												
Wood Hollow	Winter	Poor-Fair	H				Winter	Poor-Fair	H		Fair				

Source: UDWR, 1980.

APPENDIX III-5b

STATES GOVERNMENT
memorandum

DATE: February 7, 1979

REPLY TO ATTN OF: Area Manager, FWS
Salt Lake City, Utah

SUBJECT: Informal Consultation, Effects of Spring Grazing on Endangered Species

TO: Donald L. Pendleton
District Manager, BLM
Richfield, Utah

FEB 15 1979

We are in receipt of your January 8, 1979 memorandum requesting informal consultation on the effects of spring grazing on the Utah prairie dog and the bald eagle.

Many of the following comments concerning the prairie dog came from Mr. Coleman Crocker-Bedford's Master of Science thesis, Range Interactions of Utah Prairie Dogs and Cattle. Mr. Crocker-Bedford is now a biologist for the U. S. Forest Service in Richfield, Utah.

According to Mr. Crocker-Bedford, past livestock grazing may be responsible for much of the present scarcity of early spring forage on high plateau rangelands. Livestock grazing can greatly affect the distribution and density of spring forage for Utah prairie dogs. Prairie dogs occurring at high elevations depend upon early spring forage for survival as well as normal reproduction. Breeding occurs in early March and lactation continues into June. Adult female prairie dogs require twice as much energy during the reproductive season as at other times of the year. Consequently, any spring livestock grazing that reduces the vigor of "cool season grasses" may seriously threaten~~ed~~ normal reproduction. If range conditions become suboptimal for prairie dogs then reproductive rates needed to sustain a stable population may drop below critical levels.

Heavy grazing by livestock in the past has reduced suitable prairie dog habitat. In fact, overgrazing on prairie dog range is one of the main factors that contributed to the endangered status of the Utah prairie dog. The current standards for spring grazing on Awapa will not further reduce the food supply of the Utah prairie dog if regulated; however, prairie dog expansion seems unlikely due to the present permit restrictions. We urge you to continue close supervision of all grazing practices to insure that replacement of vital grasses by shrubs is minimal. We suggest that livestock grazing be gradually shifted from spring to late spring, early summer. This will encourage the growth of cool season forage which will enhance habitat features for the Utah prairie dog.

The effects of spring grazing on bald eagles are of no serious concern at this time. Bald eagles usually arrive in Utah in mid-November and depart in early March. If range conditions were severely overgrazed, the eagle-lagomorph food chain might possibly be in jeopardy. Eagle predation on livestock occurs most commonly on overgrazed land due to an increase in food stress from reduction in natural prey populations. Golden eagles, rather than bald eagles, are more frequently associated with this type of conflict.

Incidentally, verbal requests for informal consultation may be made directly to our Endangered Species Team; however, correspondence concerning informal consultations should be addressed to the Area Manager.

Thank you for your interest in conserving endangered species.

Robert H. Shields

OPTIONAL FORM NO. 10
(REV. 7-76)
GSA FPMR (41 CFR) 101-11.6
5010-112

APPENDIX III-6

Recent Licensed Use Patterns for Livestock Operations in the Mountain Valley Planning Area

The following table shows the annual licensed use for the last 10 years for each allotment in the Mountain Valley Planning Area. Each allotment is broken down by the number of operators and livestock preference.

Because no actual data is available for the planning area, the average use for the 10-year period was considered to be the current actual use and was used for comparative purposes in the EIS.

APPENDIX III-6

Recent Licensed Use Patterns for the Mountain Valley Planning Area

Allotment	Number of Operators	Preference	Licensed Use (Total Livestock AUMs Used)										
			1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969
Angle Bench	2	375 Cat.	375	300	375	375	375	375	375	375	375	375	375
Antelope Valley	1	2,538 Shp.	a	1,002	1,260	1,200	1,327	1,800	2,448	2,400	1,950	1,928	2,234
Apple Spring	1	190 Shp.	75	75	100	87	0	0	0	0	0	0	0
Aurora	3	49 Cat. 640 Shp.	227	212	325	617	689	689	689	689	689	689	689
Axhandle	4	138 Cat. 277 Shp.	219	219	260	194	113	113	113	113	113	88	113
Axtell	1	88 Cat.	88	88	6	88	88	88	88	88	0	0	0
Bear Valley	1	150 Cat.	159	150	150	125	150	150	0	0	0	0	0
Box Creek	4	109 Shp.	a	83	95	3	3	109	95	109	109	109	109
Burrville	3	48 Cat.	a	44	32	10	48	32	32	48	40	48	48
Canal	4	317 Cat. 57 Shp.	374	331	334	372	400	363	400	400	400	362	362
Cannon-Whitaker (unallotted)	0	Unallotted	0	0	0	0	0	0	0	0	0	0	0
Cedar Grove	11	324 Cat. 1,665 Shp.	a	551	592	801	1,003	1,571	1,601	1,829	1,828	1,726	1,419
Chicken Coop	3	129 Cat. 260 Shp.	364	247	351	261	234	260	260	234	234	205	285
Oeer Flat (unallotted)	0	Unallotted	0	0	0	0	0	0	0	0	0	0	0
Oenmark	1	2,898 Shp.	1,904	1,190	2,392	2,215	2,350	2,198	2,200	2,497	2,497	2,497	2,497
Ory Hill (unallotted)	0	Unallotted	0	0	0	0	0	0	0	0	0	0	0
Ory Lake	1	238 Cat.	a	0	57	0	0	0	0	0	257	257	237
Dry Wash	1	216 Cat.	216	144	216	216	216	216	217	111	90	50	166
Ourkee	1	134 Shp.	0	0	0	0	100	134	54	80	86	111	134
East Bench	5	772 Cat.	761	652	362	820	700	676	764	770	773	770	770
East Fork	1	120 Cat.	a	30	0	120	120	120	120	120	120	120	120
East Piute	4	166 Cat. 52 Shp.	168	183	221	221	221	221	221	202	221	221	221
Elbow	1	214 Shp.	0	0	0	0	124	214	214	214	202	214	214
Fayette Cattle	9	1,615 Cat. 472 Shp.	1,451	1,029	1,040	1,270	1,370	1,272	1,470	1,764	2,087	0	0
Fishlake	1	737 Shp.	a	268	268	424	745	745	745	740	740	740	740
Flat Canyon (N. Sevier)	1	92 Shp.	91	92	92	91	138	96	93	96	0	0	0
Flat Canyon (Sanpete)	1	350 Cat.	350	350	350	350	350	350	350	350	350	350	350
Greenwich Creek	1	13 Cat. 20 Shp.	13	13	13	33	13	33	33	30	31	0	0
Gunnison Valley	1	2,134 Shp.	592	566	0	775	775	646	839	878	0	0	0
Gypsum	2	216 Cat. 1,015 Shp.	a	607	822	762	1,107	827	956	941	876	916	946
Hatch Canyon	3	46 Shp.	15	15	46	15	16	47	48	48	48	48	48
Hayes Canyon	1	551 Shp.	256	243	406	406	406	365	551	551	551	551	551
Hodge Ranch	1	484 Shp.	330	96	0	136	0	0	0	360	360	484	494
Hop Creek	1	240 Shp.	240	240	240	120	120	120	120	120	160	160	120
Horse Ridge	1	105 Shp.	105	105	105	105	105	105	105	105	0	0	0
Hunt	1	52 Shp.	0	0	0	44	44	26	44	52	52	52	52
Hunter Spring	2	167 Cat.	54	24	58	58	168	168	40	58	58	58	58
Indian Hollow	1	108 Shp.	54	108	0	0	0	0	0	0	108	108	108

(continued)

APPENDIX III-6 (continued)

Allotment	Number of Operators	Preference	Licensed Use (Total Livestock AUMs Used) 1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969
Jones	1	12 Shp.	0	0	0	12	12	12	13	13	13	13	13
Joseph	5	170 Cat.	160	160	161	165	165	165	162	172	119	119	119
Junction	1	350 Cat.	350	350	350	350	350	350	350	350	350	350	350
Kingston Canyon	2	72 Cat. 84 Shp.	72	72	72	72	72	72	72	72	72	72	72
Koosharem Creek	3	46 Shp.	a	15	31	30	38	32	48	48	48	48	48
Little Valley	2	590 Shp.	375	487	442	573	491	491	92	92	92	92	92
Lone Cedar	1	1,310 Shp.	294	247	109	1,034	700	956	954	954	730	1,310	1,310
Long Flat	1	1,149 Shp.	7	337	1,080	1,035	1,147	925	1,060	921	921	921	1,030
Lost Creek	1	66 Cat.	66	66	66	66	66	66	66	66	66	66	66
Magleby	1	34 Shp.	34	34	34	34	34	33	34	33	14	0	0
Manning Creek	1	138 Cat.	a	0	0	0	0	0	0	0	201	201	201
Maple Canyon	2	135 Shp.	105	105	105	115	115	115	135	115	135	135	135
Marysvale	1	52 Cat.	0	0	0	52	67	53	52	0	0	0	0
Mayfield Cattle	1	211 Cat.	211	0	210	210	210	211	0	0	0	0	0
Middle Hollow	1	82 Cat.	81	81	81	82	82	82	82	82	82	0	0
Monroe Coop	4	1,017 Shp.	782	543	731	787	845	835	863	793	0	0	0
N. Cove Mountain	2	540 Cat. 296 Shp.	0	0	0	0	0	0	835	835	947	836	836
North Hollow	1	72 Cat.	72	72	72	72	72	72	72	72	72	72	0
North Narrows	8	448 Cat. 254 Shp.	a	534	615	525	618	618	703	703	703	703	703
Oak Spring	3	319 Shp.	0	0	0	0	0	0	0	0	0	0	66
Ogden	2	350 Cat.	0	0	25	55	30	30	65	225	175	310	333
P-Hill (unallotted)	0	Unallotted	0	0	0	0	0	0	0	0	0	0	0
Parson Mills	2	21 Shp.	20	20	20	27	21	21	21	21	21	21	21
Pearson-Lewis	2	127 Cat.	a	46	45	126	125	46	46	46	46	46	46
Piute Dam	1	123 Shp.	0	0	0	123	0	35	123	123	123	123	123
Plateau	1	390 Shp.	391	363	391	397	363	367	347	391	347	347	347
Poulson	1	29 Cat.	29	29	29	29	29	29	29	29	29	29	29
Red Canyon	1	702 Cat.	702	702	546	550	600	450	450	450	699	550	520
Ricks Pasture	1	11 Cat.	11	11	11	11	11	11	11	11	11	11	11
River	1	56 Cat.	0	0	56	23	0	56	56	56	56	56	56
Rock Canyon	1	1,200 Cat.	267	267	267	384	250	256	302	383	225	170	188
Rocky Ford	5	386 Cat.	265	201	243	243	281	281	323	344	294	294	387
Rough Canyon	1	591 Shp.	427	427	591	591	591	400	591	591	591	591	591
Sall's Meadow	2	176 Shp.	36	36	36	36	0	0	148	176	175	175	176
Sand Ledges	2	451 Cat.	0	0	267	167	267	451	451	451	451	239	451
Sanpitch North	1	240 Shp.	46	51	91	158	158	158	188	188	188	188	188
Sanpitch South	1	85 Shp.	30	32	58	101	101	101	121	121	121	121	121
South Hollow	1	292 Cat.	292	166	292	292	292	0	0	0	0	0	0
South Narrows	4	281 Cat. 425 Shp.	37	270	464	464	524	470	862	731	692	425	349
South Valley	1	2,777 Shp.	2,140	1,446	1,630	1,710	1,349	1,667	2,000	2,700	2,776	2,300	2,776
Swedes Canyon	1	396 Shp.	a	159	388	324	324	324	365	323	324	324	362
Tate	1	20 Cat.	0	0	0	20	20	20	20	0	0	0	0

(continued)

APPENOIX III-6 (concluded)

Allotment	Number of Operators	Preference	Licensed Use (Total Livestock AUMs Used) 1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969
Ten Mile	1	149 Shp.	0	0	0	0	0	134	134	149	149	149	149
Timber Canyon	2	588 Shp.	588	588	588	404	588	588	588	588	588	588	588
Twelve Mile	1	99 Cat.	a	74	74	50	99	99	99	99	99	99	99
Twist	3	209 Cat.	209	189	209	209	209	209	209	209	209	209	209
Uinta	1	109 Shp.	109	109	109	109	109	109	109	109	109	109	109
Under-the-Rim	1	286 Shp.	48	26	64	64	127	17	287	286	286	286	286
Washburn (unallotted)	0	Unallotted	0	0	0	0	0	0	0	0	0	0	0
West Side	1	839 Shp.	336	540	612	612	612	839	839	839	840	840	840
Wilson Dump	1	45 Shp.	0	0	0	0	0	0	45	45	45	45	45
Wood Hollow	1	213 Shp.	213	213	213	213	213	213	213	0	0	0	0
Totals	167[b]	39,694	--[a]	18,325	22,046	25,020	26,040	26,598	31,468	31,093	29,930	26,911	27,992
Percent of Preference Use				46	56	63	66	67	79	78	75	68	71

[a]Oata not currently available.

[b]Because some operators use two or more allotments, only 111 total operators have grazing operations in the planning area.

APPENDIX III-7

Ranch Budget Information

The following tables contain the partial budgets for all ranch categories and scenerios for each of the alternative actions.

These budgets were developed by the Economics, Statistics, and Cooperative Service (ESCS) of the Department of Agriculture. Ranch data from the Mountain Valley Planning Area were provided to ESCS as input to a ranch budget computer model. The model then produced the following baseline (existing) budgets.

TITLE: UTAH MOUNTAIN VALLEY EIS AREA SHEEP ENTERPRISE 200 EWES AND OVER 1978

1. INVESTMENT SUMMARY	CURRENT REPLACEMENT TOTAL	CURRENT REPLACEMENT PER UNIT	AVERAGE ACQUISITION TOTAL	AVERAGE ACQUISITION PER UNIT
LIVESTOCK	44084.00	83.49	44084.00	83.49
EQUIPMENT	21733.00	41.16	9283.67	17.58
*TRACTORS AND TRUCKS	16539.00	31.32	10088.79	19.11
*OTHER MACHINERY	22265.00	42.17	13581.65	25.72
TOTAL	103342.12	195.72	75759.25	143.48

(*FULL INVESTMENT COST - ITEMS MAY SERVE MULTIPLE ENTERPRISES)

2. PRODUCTION	UNITS	QUANTITY	WEIGHT	PRICE	VALUE/UNIT	VALUE	VALUE/ PRODUCTION UNIT
SLAUGHTER LAMBS	HD.	369.00	1.02	60.99	62.21	22955.42	
FEEDER LAMBS	HD.	158.00	0.85	67.09	57.03	9010.18	
EWES	HD.	89.00	1.30	17.00	22.10	1966.90	
WOOL	LBS.	546.00	9.80	0.74	7.25	3959.59	
WOOL INCEN PAYMT	DOL.	3960.00	1.00	0.45	0.45	1782.00	
UNSHRN LAMB PYMT	CWT.	134.00	1.00	1.34	1.34	179.55	
TOTAL RECEIPTS						39853.65	75.48

3. VARIABLE COSTS	UNITS	NUMBER OF UNITS	PRICE	VALUE	COST/ PRODUCTION UNIT
PUB GRAZ-BLM	AM	1911.0	0.30	573.30	1.09
PUB GRAZ/FOREST	AM	1638.0	0.32	524.16	0.99
PRIVATE RANGE	ACRE	651.0	0.0	0.0	0.0
IRRIGATED PAST	ACRE	23.8	19.11	454.82	0.86
CROP RESIDUE	ACRE	27.0	0.0	0.0	0.0
HAY (PROD.)	TN.	29.6	25.47	753.91	1.43
GRAIN (PURCH.)	TN.	7.9	84.54	669.56	1.27
SHEEP PELLETS	TN.	0.5	98.96	51.46	0.10
OTHER FEED	DOL.	126.0	1.00	126.00	0.24
SALT & MINERALS	DOL.	173.7	1.00	173.68	0.33
SPRAY & DIPPING	DOL.	29.0	1.00	29.00	0.05
VET & MED	DOL.	163.7	1.00	163.68	0.31
MARKETING	DOL.	51.0	1.00	51.00	0.10
TRUCKING	DOL.	860.6	1.00	860.64	1.63
SHEARING&TAGGING	HD.	546.0	1.31	715.26	1.35
PAST. RENT/LEASE	ACRE	651.0	1.20	781.20	1.48
ORGANIZATIONS	DOL.	220.0	1.00	220.00	0.42
LEGAL & ACCOUNT	DOL.	169.0	1.00	168.96	0.32
WOOL STORAGE	DOL.	31.7	1.00	31.68	0.06
PREDATOR CONTROL	DOL.	290.4	1.00	290.40	0.55
RAM DEATH LOSS	HD.	0.5	223.00	120.42	0.23
FAMILY LABOR	HR.	1162.0	3.70	4299.40	8.14
MACH FUEL & LUBE				537.64	1.02
MACHINERY REPAIR				395.97	0.75
EQUIP FUEL & LUBE				241.85	0.46
EQUIP REPAIR				202.39	0.38
INTEREST ON OPER CAPITAL	DOL.	8938.11	0.09	777.61	1.47
TOTAL VARIABLE COSTS				13213.98	25.03

	VALUE	PER PRODUCTION UNIT
4. INCOME ABOVE VARIABLE COSTS	26639.67	50.45
5. OWNERSHIP COSTS (REPLACEMENT, TAXES, INTEREST, AND INSURANCE)		
MACHINERY	1009.18	1.91
EQUIPMENT	1544.35	2.92
LIVESTOCK	4862.09	9.21
LAND TAXES	439.80	0.83
TOTAL OWNERSHIP COSTS	7855.41	14.88
6. OTHER COSTS		
LAND CHARGE (LAND PRICE)	6892.37	13.05
GEN FARM OVERHEAD	512.16	0.97
MANAGEMENT CHARGE (7.00% OF TC-LAND-PURCH. LVSK)	1479.92	2.80
TOTAL OTHER COSTS	8884.44	16.83
7. TOTAL OF ABOVE COSTS	29953.83	56.73
8. RETURN TO RISK	9899.82	18.75

FOOTNOTE: 125% DOCKING RATE; 19% REPLACEMENT RATE; 4% LAMB LOSS DOCKING TO MARKET; 99% MARKET LAMBS; 29% OF MARKET LAMBS SOLD AS FEEDERS; 3% EWE LOSS; 16% OF EWES SOLD AS CULLS; 9.8 LB FLEECE WEIGHT; 29 EWES PER RAM.

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KERRY GEE
12/21/79

(continued)

TITLE: UTAH MOUNTAIN VALLEY EIS AREA SHEEP ENTERPRISE LESS THAN 200 EWES 1978

1. INVESTMENT SUMMARY	CURRENT REPLACEMENT TOTAL	CURRENT REPLACEMENT PER UNIT	AVERAGE ACQUISITION TOTAL	AVERAGE ACQUISITION PER UNIT
LIVESTOCK	6343.00	88.10	6343.00	88.10
EQUIPMENT	4841.00	67.24	1854.42	25.76
*TRACTORS AND TRUCKS	14595.00	202.71	8902.95	123.65
*OTHER MACHINERY	14508.00	201.50	8849.88	122.91
TOTAL	40011.19	555.71	25674.43	356.59

(*FULL INVESTMENT COST - ITEMS MAY SERVE MULTIPLE ENTERPRISES)

2. PRODUCTION	UNITS	QUANTITY	WEIGHT	PRICE	VALUE/UNIT	VALUE	VALUE/ PRODUCTION UNIT
SLAUGHTER LAMBS	HD.	50.00	1.02	60.99	62.21	3110.49	
FEEDER LAMBS	HD.	17.00	0.85	67.09	57.03	969.45	
EWES	HD.	12.00	1.30	17.00	22.10	265.20	
WOOL	LBS.	75.00	9.80	0.74	7.25	543.90	
WOOL INCEN PAYMT	DOL.	544.00	1.00	0.45	0.45	244.80	
UNSHRN LAMB PYMT	CWT.	65.45	1.00	1.34	1.34	87.70	
TOTAL RECEIPTS						5221.54	72.52

3. VARIABLE COSTS	UNITS	NUMBER OF UNITS	PRICE	VALUE	COST/ PRODUCTION UNIT
PUB GRAZ-BLM	AM	257.0	0.30	77.10	1.07
PRIVATE RANGE	ACRE	171.0	0.0	0.0	0.0
IRRIGATED PAST	ACRE	36.0	19.11	687.95	9.55
CROP RESIDUE	ACRE	29.0	0.0	0.0	0.0
HAY (PROD.)	TN.	3.5	25.47	91.69	1.27
GRAIN (PURCH.)	TN.	0.3	84.54	22.83	0.32
SHEEP PELLETS	TN.	1.2	73.27	87.92	1.22
OTHER FEED	DOL.	23.8	1.00	23.75	0.33
SALT & MINERALS	DOL.	87.1	1.00	87.12	1.21
SPRAY & DIPPING	DOL.	12.0	1.00	12.00	0.17
VET & MED	DOL.	43.2	1.00	43.20	0.60
MARKETING	DOL.	31.0	1.00	30.96	0.43
TRUCKING	DOL.	35.3	1.00	35.28	0.49
SHEARING&TAGGING	HD.	75.0	1.31	98.25	1.36
ORGANIZATIONS	DOL.	51.0	1.00	51.00	0.71
LEGAL & ACCOUNT	DOL.	25.0	1.00	25.00	0.35
PREDATOR CONTROL	DOL.	57.6	1.00	57.60	0.80
RAM DEATH LOSS	HD.	0.1	223.00	20.07	0.28
FAMILY LABOR	HR.	432.0	3.70	1598.40	22.20
MACH FUEL & LUBE				224.21	3.11
MACHINERY REPAIR				135.95	1.89
EQUIP FUEL & LUBE				52.50	0.73
EQUIP REPAIR				44.78	0.62
INTEREST ON OPER CAPITAL	DOL.	3131.53	0.09	272.45	3.78
TOTAL VARIABLE COSTS				3780.03	52.50

4. INCOME ABOVE VARIABLE COSTS	1441.51	20.02
5. OWNERSHIP COSTS (REPLACEMENT, TAXES, INTEREST, AND INSURANCE)		
MACHINERY	393.65	5.47
EQUIPMENT	279.05	3.88
LIVESTOCK	724.12	10.06
LAND TAXES	251.92	3.50
TOTAL OWNERSHIP COSTS	1648.73	22.90
6. OTHER COSTS		
LAND CHARGE (LAND PRICE)	3948.00	54.83
GEN FARM OVERHEAD	133.92	1.86
MANAGEMENT CHARGE (7.00% OF TC-LAND-PURCH. LVSK)	371.75	5.16
TOTAL OTHER COSTS	4453.67	61.86
7. TOTAL OF ABOVE COSTS	9882.42	137.26
8. RETURN TO RISK	-4660.89	-64.73

FOOTNOTE: 120% DOCKING RATE, 20% REPLACEMENT RATE; 5% LAMB LOSS DOCKING TO MARKET; 53% MARKET LAMBS; 25% MARKET LAMBS SOLD AS FEEDERS: 4% EWE DEATHS: 16% EWES SOLD AS CULLS, 9.8 LBS FLEECE WEIGHT; 24 EWES PER RAM;

12/02/79
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12/20/79

(continued)

APPENDIX III-7 (continued)

TITLE: UTAH MOUNTAIN VALLEY EIS AREA BEEF COW ENTERPRISE 200 COWS AND OVER 1978

1. INVESTMENT SUMMARY	CURRENT REPLACEMENT TOTAL	CURRENT REPLACEMENT PER UNIT	AVERAGE ACQUISITION TOTAL	AVERAGE ACQUISITION PER UNIT
LIVESTOCK	113344.00	404.80	113344.00	404.80
EQUIPMENT	52737.00	188.35	21181.66	75.65
*TRACTORS AND TRUCKS	32040.00	114.43	19544.40	69.80
*OTHER MACHINERY	3689.00	13.17	2250.29	8.04
TOTAL	200016.37	714.34	154526.69	551.88

(*FULL INVESTMENT COST - ITEMS MAY SERVE MULTIPLE ENTERPRISES)

2. PRODUCTION	UNITS	QUANTITY	WEIGHT	PRICE	VALUE/UNIT	VALUE	VALUE/ PRODUCTION UNIT
STEER CALVES	CWT.	27.00	4.10	52.63	215.78	5826.14	
HEIFER CALVES	CWT.	15.00	3.80	45.27	172.03	2580.39	
FEEDER STEERS	CWT.	78.00	6.50	49.14	319.41	24913.98	
FEEDER HEIFERS	CWT.	56.00	6.20	44.27	274.47	15370.54	
CULL COWS	CWT.	48.00	9.58	22.72	217.66	10447.56	
TOTAL RECEIPTS						59138.61	211.21

3. VARIABLE COSTS	UNITS	NUMBER OF UNITS	PRICE	VALUE	COST/ PRODUCTION UNIT
PUB GRAZ-BLM	AM	245.0	1.50	367.50	1.31
PUB GRAZ/FOREST	AM	670.0	1.61	1078.70	3.85
PRIVATE RANGE	ACRE	5248.0	0.0	0.0	0.0
HAY (PROD.)	TN.	473.0	31.00	14663.00	52.37
HAY (PROD.)	TN.	110.0	31.00	3410.00	12.18
CROP RESIDUE	AUMS	164.0	0.0	0.0	0.0
IRRIGATED PAST	ACRE	96.0	19.11	1834.55	6.55
SALT & MINERALS	CWT.	100.8	3.38	340.70	1.22
VET & MED	DOL.	868.0	1.00	868.00	3.10
TRUCKING	DOL.	280.0	1.00	280.00	1.00
MARKETING	DOL.	168.0	1.00	168.00	0.60
FAMILY LABOR	HR.	2160.0	3.70	7992.00	28.54
PAST. RENT/LEASE	AUMS	656.0	3.09	2027.04	7.24
MACH FUEL & LUBE				2923.02	10.44
MACHINERY REPAIR				2369.01	8.46
EQUIP REPAIR				317.23	1.13
EQUIPMENT LABOR	HRS.	17.60	2.92	51.39	0.18
INTEREST ON OPER CAPITAL	DOL.	22641.72	0.09	1992.47	7.12
TOTAL VARIABLE COSTS				40682.60	145.29

	VALUE	PER UNIT
4. INCOME ABOVE VARIABLE COSTS	18456.01	65.91
5. OWNERSHIP COSTS (REPLACEMENT, TAXES, INTEREST, AND INSURANCE)		
MACHINERY	9542.95	34.08
EQUIPMENT	2821.55	10.08
LIVESTOCK	11560.93	41.29
LAND TAXES	6444.92	23.02
TOTAL OWNERSHIP COSTS	30370.35	108.47
6. OTHER COSTS		
LAND CHARGE (LAND PRICE)	79148.12	282.67
GEN FARM OVERHEAD	2510.00	8.96
MANAGEMENT CHARGE (7.00% OF TC-LAND-PURCH. LVSK)	4698.26	16.78
TOTAL OTHER COSTS	86356.37	308.42
7. TOTAL OF ABOVE COSTS	157409.25	562.18
8. RETURN TO RISK	-98270.62	-350.97

FOOTNOTE: 79% CALF CROP BORN; 5% CALF DEATH LOSS TO WEANING; 20 COWS PER BULL; 20% REPLACEMENT RATE; 2% COW LOSS

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12/20/79

(continued)

APPENDIX III-7 (continued)

TITLE: UTAH MOUNTAIN VALLEY EIS AREA BEEF COW BUDGET 100-199 COWS 1978

1. INVESTMENT SUMMARY	CURRENT REPLACEMENT TOTAL	PER UNIT	AVERAGE ACQUISITION TOTAL	PER UNIT
LIVESTOCK	50450.00	400.40	50450.00	400.40
EQUIPMENT	40027.50	317.68	16016.21	127.11
*TRACTORS AND TRUCKS	32040.00	254.29	19544.40	155.11
*OTHER MACHINERY	2163.00	17.17	1319.43	10.47
TOTAL	123747.31	982.12	86396.87	685.69
(*FULL INVESTMENT COST - ITEMS MAY SERVE MULTIPLE ENTERPRISES)				

2. PRODUCTION	UNITS	QUANTITY	WEIGHT	PRICE	VALUE/UNIT	VALUE	VALUE/ PRODUCTION UNIT
STEER CALVES	CWT.	15.00	4.58	52.63	241.05	3615.63	
HEIFER CALVES	CWT.	8.00	4.52	45.27	204.62	1636.96	
FEEDER STEERS	CWT.	32.00	6.80	49.14	334.15	10692.86	
FEEDER HEIFERS	CWT.	20.00	6.20	44.27	274.47	5489.48	
CULL COWS	CWT.	16.00	9.50	22.72	215.84	3453.44	
TOTAL RECEIPTS						24888.42	197.53

3. VARIABLE COSTS	UNITS	NUMBER OF UNITS	PRICE	VALUE	COST/ PRODUCTION UNIT
PUB GRAZ-BLM	AM	126.0	1.50	189.00	1.50
PUB GRAZ/FOREST	AM	470.0	1.61	756.70	6.01
PRIVATE RANGE	ACRE	2568.0	0.0	0.0	0.0
HAY (PROD.)	TN.	207.0	31.00	6417.00	50.93
HAY (PROD.)	TN.	29.7	31.00	920.70	7.31
CROP RESIDUE	AUMS	72.0	0.0	0.0	0.0
IRRIGATED PAST	ACRE	22.5	19.11	431.89	3.43
SALT & MINERALS	CWT.	44.1	3.38	149.05	1.18
VET & MED	DOL.	655.0	1.00	655.00	5.20
TRUCKING	DOL.	126.0	1.00	126.00	1.00
MARKETING	DOL.	320.0	1.00	320.00	2.54
FAMILY LABOR	HR.	1516.0	3.70	5609.20	44.52
PAST. RENT/LEASE	AUMS	150.0	3.09	494.40	3.92
MACH FUEL & LUBE				946.63	7.51
MACHINERY REPAIR				598.83	4.75
EQUIP REPAIR				264.54	2.10
EQUIPMENT LABOR	HRS.	10.48	2.92	30.60	0.24
INTEREST ON OPER CAPITAL	DOL.	11247.73	0.09	989.80	7.86
TOTAL VARIABLE COSTS				18899.32	149.99

	VALUE	PER UNIT
4. INCOME ABOVE VARIABLE COSTS	5989.09	47.53
5. OWNERSHIP COSTS (REPLACEMENT, TAXES, INTEREST, AND INSURANCE)		
MACHINERY	2498.22	19.83
EQUIPMENT	2187.83	17.36
LIVESTOCK	5172.95	41.06
LAND TAXES	2983.88	23.68
TOTAL OWNERSHIP COSTS	12842.87	101.93
6. OTHER COSTS		
LAND CHARGE (LAND PRICE)	36644.15	290.83
GEN FARM OVERHEAD	999.00	7.93
MANAGEMENT CHARGE (7.00% OF TC-LAND-PURCH. LVSK)	2083.01	16.53
TOTAL OTHER COSTS	39726.17	315.29
7. TOTAL OF ABOVE COSTS	71468.31	567.21
8. RETURN TO RISK	-46579.89	-369.68

FOOTNOTE: 79% CALF CROP BORN; 5% CALF DEATH LOSS TO WEANING; 20 COWS PER BULL; 16% REPLACEMENT RATE; 3% COW LOSS

12/02/79
KERRY GEE
01/08/80

(continued)

APPENDIX III-7 (concluded)

TITLE: UTAH MOUNTAIN VALLEY EIS AREA, BEEF COW ENTERPRISE LESS THAN 100 COWS 1978

1. INVESTMENT SUMMARY	CURRENT REPLACEMENT		AVERAGE ACQUISITION	
	TOTAL	PER UNIT	TOTAL	PER UNIT
LIVESTOCK	18971.00	387.16	18971.00	387.16
EQUIPMENT	15387.50	314.03	6394.60	130.50
*TRACTORS AND TRUCKS	20040.00	408.98	12224.40	249.48
*OTHER MACHINERY	0.0	0.0	0.0	0.0
TOTAL	54142.27	1104.94	37333.78	761.91

(*FULL INVESTMENT COST - ITEMS MAY SERVE MULTIPLE ENTERPRISES)

2. PRODUCTION	UNITS	QUANTITY	WEIGHT	PRICE	VALUE/UNIT	VALUE	VALUE/ PRODUCTION UNIT
STEER CALVES	CWT.	7.00	4.31	52.63	226.84	1587.85	
HEIFER CALVES	CWT.	5.00	4.24	45.27	191.94	959.72	
FEEDER STEERS	CWT.	11.00	5.89	49.14	289.43	3183.78	
FEEDER HEIFERS	CWT.	7.00	5.24	44.27	231.97	1623.82	
CULL COWS	CWT.	6.00	9.50	22.72	215.84	1295.04	
TOTAL RECEIPTS						8650.21	176.53

3. VARIABLE COSTS	UNITS	NUMBER OF UNITS	PRICE	VALUE	COST/ PRODUCTION UNIT
PUB GRAZ-BLM	AM	72.0	1.50	108.00	2.20
PUB GRAZ/FOREST	AM	99.0	1.61	159.39	3.25
PRIVATE RANGE	ACRE	245.1	0.0	0.0	0.0
HAY (FECD.)	TN.	82.8	31.00	2566.80	52.38
HAY (PROD.)	TN.	27.7	31.00	858.70	17.52
CROP RESIDUE	AUMS	112.0	0.0	0.0	0.0
IRRIGATED PAST	ACRE	49.8	19.11	951.68	19.42
SALT & MINERALS	CWT.	12.0	3.38	40.56	0.83
VET & MED	DOL.	230.3	1.00	230.30	4.70
TRUCKING	DOL.	245.0	1.00	245.00	5.00
MARKETING	DOL.	177.0	1.00	177.00	3.61
FAMILY LABOR	HR.	610.0	3.70	2257.00	46.06
MACH FUEL & LUBE				691.84	14.12
MACHINERY REPAIR				351.72	7.18
EQUIP REPAIR				93.20	1.90
EQUIPMENT LABOR	HRS.	3.86	2.92	11.27	0.23
INTEREST ON OPER CAPITAL	DOL.	5560.66	0.09	489.34	9.99
TOTAL VARIABLE COSTS				9231.78	188.40
4. INCOME ABOVE VARIABLE COSTS				-581.57	-11.87
5. OWNERSHIP COSTS (REPLACEMENT, TAXES, INTEREST, AND INSURANCE)					
MACHINERY				968.01	19.76
EQUIPMENT				868.45	17.72
LIVESTOCK				1917.23	39.13
LAND TAXES				1591.19	32.47
TOTAL OWNERSHIP COSTS				5344.87	109.08
6. OTHER COSTS					
LAND CHARGE (LAND PRICE)				19540.92	398.79
GEN FARM OVERHEAD				423.00	8.63
MANAGEMENT CHARGE (7.00% OF TC-LAND-PURCH. LVSK)				938.59	19.15
TOTAL OTHER COSTS				20902.51	426.58
7. TOTAL OF ABOVE COSTS				35479.16	724.06
8. RETURN TO RISK				-26828.95	-547.53

FOOTNOTE: [illegible]% CALF CROP BORN; 5% CALF DEATHLOSS TO WEANING; 25 COWS PER BULL; 14% REPLACEMENT RATE, 2% COW LOSS

12/02/79
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02/01/80

APPENDIX III-8

Objectives of Visual Resource Management Classes

I. Visual Resource Management Classes

The BLM's Visual Resource Management (VRM) System divides public lands administered by the BLM into five Visual Resource Management classes. The management objectives for each VRM class are described below:

Class I. This class provides for natural ecological changes only. (There are no Class I areas within the planning area.)

Class II. Changes in any of the basic landscape elements should not be evident in the management activity.

Class III. Changes in the basic elements may be evident in the management activity. However, modifications should remain subordinate to the landscape character.

Class IV. Changes may subordinate the landscape character, but must reflect what could be natural occurrence in the characteristic area.

Class V. Change is required. The area has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding landscape.

APPENDIX IV-1

Determination of Visual Impact

The degree to which a range development adversely affects the visual quality of the landscape depends upon the amount of visual contrast that is created between the development and the existing landscape character. This contrast can be measured by separating the landscape into its major features (land surface, vegetation, and structures) and then predicting the magnitude of change that would occur in the four basic elements of each feature (form, line, color, and texture).

As summarized in the following table, each range development has been analyzed to predict what contrast it would cause if added to the existing landscape (subject to Chapter 1 mitigation) and viewed from a distance of up to 1/2 mile. Anticipated contrast of structures was generalized to include all alternatives. Actual contrast would vary somewhat depending on site location. The contrast ratings (numerical scores) are then compared with the numerical limit of the management objective for the VRM class involved. A contrast rating greater than the limits of the VRM class indicates an adverse visual impact.

(continued)

APPENOIX IV-1 (continued)

TABLE A

Anticipated Visual Contrast of Proposed Range Oevelopment to Landscape Feature

Proposed Range Oevelopments	Landscape Feature														
	Land Surface					Vegetation					Structure				
	Form	Line	Color	Texture	Total[a]	Form	Line	Color	Texture	Total[a]	Form	Line	Color	Texture	Total[a]
Spraying	0	0	0	0	0	8	0	2	1	11	0	0	0	0	0
Burning	0	0	0	0	0	8	0	6	2	16	0	0	0	0	0
Chaining	0	0	0	1	1	8	0	4	2	14	0	0	0	0	0
Contouring	4	9	2	1	16	4	9	2	1	16	0	0	0	0	0
Reservoirs	8	0	2	1	11	4	0	2	2	8	0	0	0	0	0
Pipeline	0	6	2	1	9	0	6	2	1	9	0	0	0	0	0
Troughs	0	0	0	0	0	0	0	0	0	0	4	0	2	1	7
Exclosures	0	0	0	0	0	4	0	2	1	7	4	3	2	1	10
Fence	0	0	0	0	0	0	0	0	0	0	4	3	2	0	9
Springs	4	0	2	1	7	4	0	2	1	7	4	0	2	1	7
Raintraps	4	0	2	1	7	4	0	2	1	7	4	0	2	1	7
Wells	4	0	2	1	7	4	0	2	1	7	4	0	2	1	7
Stock trail	4	3	2	1	10	4	3	2	1	10	0	0	0	0	0
Storage tanks	0	0	0	0	0	0	0	0	0	0	8	0	3	2	13
Pumps	0	0	0	0	0	0	0	0	0	0	4	0	2	1	7

Note: The degree of contrast allowed per feature to meet VRM Class Objectives is as follows: Class I $\leq$ 10; Class II $\leq$ 10; Class III $\leq$ 16; Class IV $\leq$ 20; and Class V $\leq$ 20.

[a]The maximum score possible is 30. A total score of 1 through 10 for each feature indicates the contrast can be seen, but does not attract attention; 11 through 20 attracts attention and the contrast begins to dominate the characteristic landscape; 21 through 30 demands attention and will not be overlooked.

APPENDIX IV-2

Methodology Used to Predict Changes in Vegetation Production and Range Condition

The methodology used to predict changes in forage production, range condition, and trend is based on range potential. The most recent surveys of range production, condition, and trend were compared to the potential for the site. The potential is represented by a comparison to a natural area, and the degree to which the range site compares indicates the improvement in forage production that could be expected.

Pertinent range management literature was reviewed (using Vallentine, 1978, as a bibliography source) by Bureau of Land Management range conservationists with field experience in the planning area. Using the above information and expertise, range management programs were developed through allotment-by-allotment planning. The types of programs developed include reductions or increases in AUMs, changes in seasons of use, implementation of rest periods, and vegetation modification where it was determined that vegetation would not respond to grazing management alone.

By comparing the forage production of the natural area with that of the areas under consideration, the amount of increase in AUMs that could be expected was determined. Predictions of improvements in range condition were arrived at in the same manner. That is, range condition would change as the vegetation responded to grazing management, plant vigor would improve, and vegetation composition would begin to resemble that of the comparison range.

The rationale for this type of determination is supported by studies which concluded that as range condition improves, forage production increases. Studies such as Launchbaugh (1969), Klemmedson (1956), Parker (1954), Short and Woolfolk (1956), and Goebel and Cook (1960) indicated that there is a straight line relationship between stocking rate, range condition, and forage production. Appendix II-1, tables A through F show predictions of forage increase by allotment and the management methods used to arrive at each forage level (i.e., chaining, seeding, and treatment and season-of-use changes necessary to make the conversion from short term to long term).

APPENDIX IV-3

Methodology Used to Determine Impact to Big Game Hunting Opportunities

The direct ratio between current hunter days and current deer, elk, and antelope AUMs (and animal numbers) establishes a multiplier used to determine impact on big game hunting opportunities. An increase or decrease in AUMs (or animal numbers) would cause a direct increase or decrease in hunting opportunities provided by the Mountain Valley Planning Area. This is not to say that an increase or decrease in hunter days would necessarily occur, but the planning area would provide for an increase or decrease in hunter days at a constant rate of hunter success, or would provide for an increase or decrease in success, if the current number of hunters were to continue to use the area. Multipliers are presented below.

Multipliers

Deer

$$\frac{\text{Current Hunter Days} = 19{,}137}{\text{Current AUMs} = 15{,}460} = 1.23$$

Antelope

$$\frac{\text{Current Hunter Days} = 5}{\text{Current AUMs} = 120} = 0.04$$

Elk

$$\frac{\text{Current Hunter Days} = 1{,}164}{\text{Current AUMs} = 1{,}726} = 0.67$$

Example:

Initial Deer AUMs 22,619 X 1.23 multiplier = Initial Hunter Days 27,999

APPENDIX IV-4

Ranch Budgets for the Mountain Valley Planning Area

The following tables contain the partial budgets for all ranch categories and scenarios for each of the alternative actions.

These budgets were developed by the Economics, Statistics, and Cooperative Services (ESCS) of the Department of Agriculture. Ranch data from the Mountain Valley Planning Area were provided to ESCS as input to a ranch budget computer model. The model then produced the following baseline (existing) budgets and also projected the budget impacts that would result from each of the alternative actions in tables A Through F.

Where increases in BLM permits are indicated, only a "head change" scenario is analyzed as explained in Chapter 4, Alternative A, Introduction.

(continued)

TABLE A
Ranch Income Impacts Due to Alternative A

Livestock Operations	Change in AUMs (percent)	Herd Size	Gross Income	Total Cash Costs	Net Cash Income	Family Labor	Return Above Cash Costs and Family Labor	Return to Total Investment
SHORT TERM								
Sheep								
Small (feed change)	-42.9	72	$5,222	$3,125	$2,097	$1,623	474	-128
Small (herd change)	-42.9	63	4,527	2,353	2,174	1,396	778	176
Large (feed change)	-38.1	528	39,854	12,481	27,373	4,769	22,604	20,082
Large (herd change)	-38.1	453	34,075	8,027	26,048	3,689	22,359	19,837
Cattle								
Small (feed change)	-39.2	49	8,650	7,788	862	2,295	-1,433	--
Small (herd change)	-39.2	47	8,304	6,920	1,384	2,167	-783	--
Medium (feed change)	-36.3	126	24,888	18,064	6,824	5,668	1,156	-2,025
Medium (herd change)	-36.3	125	24,765	17,024	7,741	5,580	2,161	-1,020
Large (feed change)	-47.1	280	59,139	44,078	15,061	8,145	6,916	-1,309
Large (herd change)	-47.1	273	57,710	40,809	16,901	7,863	9,038	813
LONG TERM								
Sheep								
Small (herd change)	+1.0	72	5,222	2,658	2,564	1,598	966	364
Large (herd change)	+0.6	528	39,854	9,407	30,447	4,299	26,147	23,625
Cattle								
Small (herd change)	+8.0	53	9,356	8,131	1,225	2,441	-1,216	-2,478
Medium (herd change)	+12.3	142	28,049	19,621	8,428	6,297	2,131	-1,050
Large (herd change)	+0.3	280	59,139	41,646	17,493	7,992	9,501	1,276

Source: U.S. Dept. of Agriculture; Economics, Statistics, and Cooperative Services, National Economics Division.

TABLE B
Ranch Income Impacts Due to Alternative B

Livestock Operations	Change in AUMs (percent)	Herd Size	Gross Income	Total Cash Costs	Net Cash Income	Family Labor	Return Above Cash Costs and Family Labor	Return to Total Investment
SHORT TERM								
Sheep								
Small (herd change)	+16.2	84	$6,092	$3,110	$2,982	$1,862	1,120	518
Large (herd change)	+6.8	564	42,570	10,178	32,392	4,591	27,801	25,279
Cattle								
Small (feed change)	-2.1	49	8,650	7,058	1,592	2,259	-677	--
Small (herd change)	-2.1	49	8,650	7,019	1,631	2,257	-625	--
Medium (feed change)	-5.6	126	24,888	17,256	7,632	5,619	2,013	-1,168
Medium (herd change)	-5.6	125	24,863	17,090	7,773	5,603	2,170	-1,011
Large (feed change)	-10.9	280	59,139	42,209	16,930	8,028	8,902	677
Large (herd change)	-10.9	278	58,894	41,469	17,425	7,963	9,462	1,237
LONG TERM								
Sheep								
Small (herd change)	+81.1	130	9,428	4,921	4,507	2,922	1,585	983
Large (herd change)	+71.9	908	68,536	17,404	51,132	7,388	43,744	41,222
Cattle								
Small (herd change)	+120.5	108	19,065	23,688	-4,623	5,031	-9,654	-10,916
Medium (herd change)	+145.9	310	61,234	46,973	14,261	13,769	492	-2,689
Large (herd change)	+121.1	619	130,739	94,592	36,147	17,670	18,477	10,252

Source: U. S. Dept. of Agriculture; Economics, Statistics, and Cooperative Services, National Economics Division.

TABLE C
Ranch Income Impacts Due to Alternative C

Livestock Operations	Change in AUMs (percent)	Herd Size	Gross Income	Total Cash Costs	Net Cash Income	Family Labor	Return Above Cash Costs and Family Labor	Return to Total Investment
SHORT TERM								
Sheep								
Small (herd change)	+22.8	88	6,382	3,294	3,088	1,970	1,118	516
Large (herd change)	+5.1	555	41,891	9,985	31,906	4,518	27,388	24,866
Cattle								
Small (herd change)	+3.6	51	9,003	7,523	1,480	2,340	-860	-2,122
Medium (herd change)	+3.8	131	25,876	16,911	8,965	5,821	3,144	-37
Large (herd change)	+6.8	298	62,941	44,401	18,540	8,496	10,044	1,819
LONG TERM								
Sheep								
Small (herd change)	+27.2	92	6,672	3,417	3,255	2,042	1,213	611
Large (herd change)	+21.9	644	48,609	11,888	36,721	5,240	31,481	28,959
Cattle								
Small (herd change)	+46.0	72	12,710	13,386	-676	3,316	-3,992	-5,254
Medium (herd change)	+55.3	196	38,716	28,425	10,291	8,702	1,589	-1,592
Large (herd change)	+11.3	312	65,898	46,586	19,312	8,895	10,417	2,192

Source: U.S. Dept. of Agriculture; Economics, Statistics, and Cooperative Services, National Economics Division.

(continued)

TABLE D
Ranch Income Impacts Due to Alternative D

Livestock Operations	Change in AUMs (percent)	Herd Size	Gross Income	Total Cash Costs	Net Cash Income	Family Labor	Return Above Cash Costs and Family Labor	Return to Total Investment
SHORT TERM								
Sheep								
Small (feed change)	-100	72	$5,222	$3,741	$1,481	$1,655	-174	--
Small (herd change)	-100	50	3,636	1,987	1,649	1,154	-107	--
Large (feed change)	-100	528	39,854	11,467	22,387	4,339	18,048	15,526
Large (herd change)	-100	328	24,789	5,795	18,994	2,756	16,238	13,716
Cattle								
Small (feed change)	-100	49	8,650	9,102	-452	2,353	-2,805	--
Small (herd change)	-100	40	7,785	6,768	1,017	2,031	-1,014	--
Medium (feed change)	-100	126	24,888	19,954	4,934	5,779	-845	--
Medium (herd change)	-100	118	23,494	16,844	6,650	5,295	1,355	-1,826
Large (feed change)	-100	280	59,139	46,813	12,326	8,319	4,007	--
Large (herd change)	-100	266	56,182	40,022	16,160	7,696	8,464	239

Source: U.S. Oept. of Agriculture; Economics, Statistics, and Cooperative Services, National Economics Division.

TABLE E
Ranch Income Impacts Due to Alternative E

Livestock Operations	Change in AUMs (percent)	Herd Size	Gross Income	Total Cash Costs	Net Cash Income	Family Labor	Return Above Cash Costs and Family Labor	Return to Total Investment
SHORT TERM								
Sheep								
Small (herd change)	+44.9	104	$7,542	$3,903	$3,639	$2,331	$1,308	706
Large (herd change)	+43.6	758	57,214	14,346	42,868	6,172	36,696	34,174
Cattle								
Small (herd change)	+22.2	60	10,592	10,095	497	2,768	-2,271	--
Medium (herd change)	+78.8	225	44,444	33,236	11,208	10,016	1,192	-1,989
Large (herd change)	+36.0	380	$80,261	57,386	22,875	10,869	12,006	3,781

Source: U.S. Dept. of Agriculture; Economics, Statistics, and Cooperative Services, National Economics Oivision.

TABLE F
Ranch Income Impacts Oue to Alternative G

Livestock Operations	Change in AUMs (percent)	Herd Size	Gross Income	Total Cash Costs	Net Cash Income	Family Labor	Return Above Cash Costs and Family Labor	Return to Total Investment
SHORT TERM								
Sheep								
Small (feed change)	-22.1	72	$5,222	$2,897	2,325	1,611	714	112
Small (herd change)	-22.1	69	4,990	2,557	2,433	1,530	903	301
Large (feed change)	-9.5	528	39,854	9,626	30,228	4,546	25,682	23,160
Large (herd change)	-9.5	523	39,416	9,294	30,122	4,256	25,866	23,344
Cattle								
Small (feed change)	-15.3	49	8,650	7,180	1,470	2,272	-802	--
Small (herd change)	-15.3	48	8,477	6,975	1,502	2,212	-710	--
Medium (feed change)	-17.7	126	24,888	17,260	7,628	5,639	1,989	-1,192
Medium (herd change)	-17.7	125	24,714	17,061	7,653	5,570	2,083	-1,098
Large (feed change)	-16.7	280	59,139	41,987	17,152	8,047	9,105	880
Large (herd change)	-16.7	278	58,902	41,521	17,381	7,968	9,413	1,188
LONG TERM								
Sheep								
Small (herd change)	+46.3	105	7,615	3,950	3,665	2,354	1,311	709
Large (herd change)	+67.1	882	66,573	17,008	49,565	7,182	42,383	39,861
Cattle								
Small (herd change)	+64.7	81	14,299	15,972	-1,673	3,747	-5,420	-6,682
Medium (herd change)	+106.0	260	51,358	38,805	12,553	11,537	1,016	-2,165
Large (herd change)	+120.8	618	130,528	94,460	36,068	17,646	18,422	10,197

Source: U.S. Oept. of Agriculture; Economics, Statistics, and Cooperative Services, National Economics Division.

GLOSSARY

LIST OF ABBREVIATIONS

AAP	average annual precipitation
AMP	Allotment Management Plan
AUM	animal unit month
BEA	Bureau of Economic Analysis
BLM	Bureau of Land Management
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESCS	Economics, Statistics, and Cooperative Service
F	Farenheit
FLPMA	Federal Land Policy and Management Act
FS	Forest Service
gal/yr	gallons per year
HMP	Habitat Management Plan
lbs.	pounds
MFP	Management Framework Plan
NEPA	National Environmental Policy Act
NRDC	Natural Resource Defense Council
PSIAC	Pacific Southwestern Interagency Committee
SCS	Soil Conservation Service
UDWR	Utah Division of Wildlife Resources
URA	Unit Resource Analysis
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
VRM	visual resource management

GLOSSARY

Accelerated Erosion. Erosion that occurs at a rate greater than natural erosion as a result of man's activities.

Acre-Foot. A volume that covers an area of 1 acre to a depth of 1 foot (43,560 cubic feet).

Actual Use. The use made of forage on any area by livestock and/or big game animals without reference to permitted or recommended use.

Adjudication. A process whereby BLM adjusts the livestock preference permits granted to permittees. The adjudication is based on BLM studies and the class, numbers, and seasons of use of livestock. Allotment boundaries are established by agreement with operators or administrative decisions.

Aerie. Nest of eagles or other raptors built on a cliff or other high place.

Allocation. The officially recognized amount of forage (generally described as AUMs) which is given to a particular kind of animal, individual livestock operator, or organization.

Allotment. An area of land where one or more operators graze their livestock. Generally consists of public lands but may include parcels of private or State lands. The numbers of livestock and seasons of use are stipulated for each allotment. An allotment may consist of one or several pastures.

Allotment Management Plan (AMP). A written program of livestock grazing management, including supportive measures, if required, designed to attain specific management goals in a grazing allotment.

Alluvial. Relating to or formed by water carrying and depositing rocks, soil, and other materials.

Ambient Air Quality. The quality of an air mass associated within a given environment.

Animal Units. One cow with a calf less than 6 months old, or an equivalent identified as 5.0 sheep, 9.6 antelope, 5.8 mule deer, or 1.9 elk.

Animal Unit Month (AUM). The amount of forage required to sustain the equivalent animal unit for one month (800 pounds of usable air dried forage).

Aquatic. Living or growing in or on the water.

Browse. As a noun, trees and shrubs used as food by cattle, deer, elk, and other animals. As a verb, to consume, feed, or eat browse plants.

Capital Value. The value of a BLM permit as a part of ranch capital (e.g., land, machinery, stock, etc.). Changes in allocated AUMs can affect the overall capital value of ranch property. Any change in permitted use has the potential of affecting the livestock operator's ability to secure a loan and the overall capital value of his property.

Carrying Capacity. The maximum stocking rate possible without inducing damage to vegetation or related resources such as watershed. This incorporates such things as the suitability of the range to grazing as well as the proper use which can be made on each and all the plants within the area. Normally expressed in terms of acres per animal unit month (AC/AUM) or sometimes referred to as the total AUMs that are available in any given area such as an allotment. Areas that are unsuitable for livestock use are not computed in the carrying capacity. This may or may not be the same as the stocking rate.

Climax Community. The final vegetation community which emerges after a series of successive vegetation stages and perpetuates itself indefinitely unless disturbed by outside forces.

Chaining. The process of modifying vegetation by pulling an anchor chain between two crawler tractors, thus reducing tall-growing, brittle vegetation and enhancing grasses and forbs.

Coliform. A general term for a group of bacteria found in the large intestine of man or animals. Its presence in water usually indicates fecal pollution.

Community. An aggregate of organisms which form a distinct ecological unit. Such a unit may be defined in terms of plants, animals, or both.

Community Allotment. Allotments involving more than one livestock operator.

Contour Furrowing/Trenching. Furrows or trenches plowed approximately on the contour on pastures and rangelands to prevent runoff and increase infiltration.

Cool-Season Plant. A plant which generally makes the major portion of its growth during the late winter, spring, and early summer.

Critical Period. A period of plant development considered essential to the survival of an individual plant.

Crucial Wildlife Habitat. That portion of the living area of a wildlife species that is essential to the survival and perpetuation of the species either as individuals or as a population.

Cultural Resources. Those resources of historical, archaeological, or architectural significance.

Current Year's Growth. The amount of vegetation growth that occurs in the period of one year.

Deferred Rotation Grazing. Discontinuance of grazing on various parts of a range in succeeding years, allowing each part to rest successively during the growing season to permit seed production, establishment of seedlings, or restoration of plant vigor. Two, but usually three or more separate units, are required. Control is usually insured by united fencing, but may be obtained by camp unit herding.

Depressed Population. A population of wildlife that is low in numbers compared to what the carrying capacity or optimum number could be.

Desirable Plants. Those plants which are palatable and productive forage species. They are normally long-lived plants which include grasses, forbs, and browse.

Ecosystem. A self-sustaining natural system which includes living and non-living components of the environment and the interactions that bind them together. Its functioning involves the circulation of matter and energy between organisms and their environment.

Endemic. A species restricted to a given geographical location. Species which are native to a given locale.

Ephemeral Stream. A stream channel which carries water only during and immediately after periods of rainfall or snowmelt.

Exchange of Use. An agreement made with an operator having ownership or control of private lands interspersed and grazed in conjunction with surrounding Federal range. This agreement specifies the carrying capacity and gives the BLM control of the non-Federal land for grazing purposes (see also percent Federal range).

Flood Plains. The lowland and relatively flat areas adjoining in land and coastal waters which are subject to a 1 percent or greater chance of flooding in any given year.

Forage. Vegetation of all forms available and of a type used for animal consumption.

Forb. A broad-leaved herb other than grass.

Geologic Erosion. Erosion that occurs at rates which are controlled by the natural environment.

Grazing Cycle. The number of years required to apply all of the treatments in the grazing formula to each pasture of the allotment. In other words, it is the completion of one full cycle of yearly schedules back to the point of beginning.

Grazing Treatments. The grazing and rest from grazing of animals at a prescribed season or level to accomplish specific changes of the vegetation.

Grazing System. A systematic sequence of grazing use and nonuse of an allotment as described in an allotment management plan.

Gully Plugs. Any means of closing a gully to prevent deeper cutting by runoff water. Usually accomplished with a bulldozer or blade by caving in the banks of the gully.

Habitat. A specific set of physical conditions that surround the single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Hedging. The persistent browsing of terminal buds of browse species causing excessive lateral branching and a reduction in upward growth.

Herb. A seed-producing plant that does not develop persistent woody tissue.

Herbage. The fleshy, edible parts of plants.

Infiltration. The flow of liquid into a substance through pores or other openings.

Infiltration Rate. Characteristically describes the maximum rate at which water can enter the soil under specific conditions, including the presence of excess water.

Intermittent Stream. A stream which carries water a considerable portion of time but which ceases to flow occasionally or seasonally because bed seepage and evapotranspiration exceed the available water supply.

Key Plant Species. A plant that is a relatively or potentially abundant species. It should be able to endure moderately close grazing and serves as an indicator of changes occurring in the vegetational complex. The key plant species are an important vegetation component that, if overused, will have a significant effect on watershed conditions, grazing capacity, or other resource values. More than one key plant species may be selected on an allotment. For example, one species may be important for watershed protection, and a different species may be important for livestock or wildlife forage.

Licensed Use. The number of AUMs purchased by a livestock operator from the BLM on an annual basis. In this EIS, 10 years of licensed use have been averaged. The averaged numbers are those referred to in the text, tables, and graphs and are considered to be current or actual use.

Litter. A surface layer of organic debris consisting of freshly fallen or slightly decomposed organic material. Litter is important because it covers and protects the soil, reduces runoff rates, increases infiltration, and yields organic matter which improves soil fertility.

Livestock Operators. A person or organization legally permitted to graze livestock on public lands.

Livestock Outfits. See range outfits.

Management Framework Plan (MFP). Land use plan for public lands administered by BLM which provides a set of goals, objectives, and constraints for a specific planning unit or area; a guide to the development of detailed plans for the management of each resource.

Mechanical Treatment. Any range modification involving the use of mechanical (tractors, plows, etc.) equipment.

Multiple-use Recommendations. Those recommendations contained in the MFP which attempt to resolve conflicts among single uses.

Non-competitive Forage. Forage which deer, elk, or antelope use and which are not used by livestock.

Ocular Reconnaissance Survey. A forage survey method which inventories vegetation by estimating total forage density, percent composition by species, and total usable forage in a given range type to determine the carrying capacity for livestock and wildlife.

Pasture. A subdivision of a grazing allotment.

Pellet Groups. A group of fecal material defecated by an animal (particularly big game) at one time.

Percent Federal Range. AUMs on public lands compared to AUMs on private and State lands.

Percent Utilization. Grazing use of current growth, usually expressed as a percent of weight removed and most often related to key plant species.

Perennial Plant. A plant that has a life cycle of 3 or more years. Because of their longevity, it is desirable to base management on these species.

Permeability (Soil). The ease with which gasses, liquids, or plant roots penetrate or pass through a layer of soil.

Permit. An authorization which allows grazing on public lands. Permits specify class of livestock on a designated area during specified seasons each year. Permits are of two types: preference (10 year) and temporary non-renewable (1 year).

Permit Value. BLM allocated AUMs may be transferred from one operator to another. The dollar value given by one operator (buyer) to induce a present permit holder (seller) to transfer his permit is known as the "permit value" of an AUM. This "permit value" may have a significant bearing on the rancher's capital value.

Phenology. Plant phenology refers to dates of sprouting, flowering, seeding, production, and regrowth, as well as other observable occurrences in plant development.

Physiological requirements. Nutritional requirements a plant needs for growth.

Planning Area Analysis (PAA). The summary of data on social and economic conditions for a planning unit or area.

Plant Composition. The mixture of plants found in a vegetation type or study area usually expressed in percents as related to all the other plants.

Plant Vigor. The relative well being and health of a plant as reflected by its ability to manufacture sufficient food for growth and maintenance.

Preference. The basis upon which permits are issued for grazing.

Prior Stable Level. A computerized number derived from deer population dynamics data from the average of 10 or more years when deer populations were stable and at or near the carrying capacity of the range of a given deer herd unit.

Profile (Soil). The series of superimposed layers of horizons in the soil.

Proper Use. A degree and time of grazing use which, if continued, will either maintain or improve the range condition consistent with conservation or other natural resources.

Range Condition. The present state of vegetation of a range site in relation to the climax (natural potential) plant community for that site. Condition is expressed as excellent, good, fair, or poor.

Range Developments. Special treatments, developments, and/or structures used to improve range forage resources or to facilitate their use by grazing animals.

Range Outfit. A permittee grazing on one allotment. For example, a permittee would have three outfits if he grazes livestock on three allotments.

Raptors. An order of birds of prey such as the eagle, hawk, owl, or vulture.

Rest. Refers to seasonal resting from livestock grazing of a range.

Rest Rotation Grazing. An intensive system of management whereby grazing is deferred on various parts of the range during succeeding years, allowing the deferred part complete rest for one year. Two or more units are required. Control by fencing is usually necessary on cattle range, but may be obtained by herding on sheep ranges.

Riparian Habitat. Habitat in which the vegetation is influenced by the water of streams, reservoirs, ponds, etc. (permanent or intermittent). It is usually unique or limited in arid regions and is, therefore, of great importance to a wide variety of wildlife.

Riparian Vegetation. Plants that are adapted to moist growing conditions found along waterways, ponds and generally moist environments.

Season of Use. Refers to the period of time that livestock are allowed to graze on an allotment.

Seasonal Use. A system of management in which the same season-of-use pattern is used each year.

Sediment Yield. Amount of mineral or organic soil material that is in suspension, is being transported, or has been moved from its site of origin.

Shrub. A plant that has a persistent, woody stem, a relatively low growth habit, and generally produces several basal shoots instead of a single trunk.

Soil Association. A group of defined and named soil units occurring together in individual and characteristic patterns over a geographic region.

Soil Classification. The systematic arrangement of soils into classes in one or more categories or levels of classification for a specific objective. Broad groupings are made on the basis of general characteristics and subdivisions on the basis of more detailed differences in specific properties.

Soil Surface Factor. A numerical expression of surface erosion activity caused by wind and water as reflected by soil movement, surface litter, erosion pavement, pedastalling, rills, flow patterns, and gullies. Values may vary from 0 for no erosion to 100 for severe erosion conditions.

State Lands. Land controlled or administered by one of the individual United States.

Stocking Rate. The degree to which a grazing unit is stocked with livestock, usually expressed in AUMs. The stocking rate may be more or less than the carrying capacity.

Succulent. Having fleshy or juicy tissues with high water content.

Suspended Solids. A dispersion of solid particles in a liquid.

Sustained Yield. The achievement and maintenance of a high level, annual or regular period, output of the various renewable resources of land without impairment of the productivity of the land and its environmental values.

Trend in Range Condition. An interpretation of the direction of change in range condition.

Trespass. The grazing of livestock on public lands without proper authority.

Unallotted Lands. Those lands not allocated to a specific use.

Unit Resource Analysis (URA). A compilation of physical resource data and an analysis of the current use, production, condition, and trend of the resource and the potentials and opportunities within a planning unit or area, including a profile of ecological values.

REFERENCES CITED

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Armour, C. L. 1977. Effects of Deteriorated Range Streams on Trout. USDI, Bureau of Land Management, Idaho State Office, Boise, Idaho. 7 p.

Aro, Richard S. 1971. "Evaluation of Pinyon-Juniper Conversion to Grassland." Journal of Range Management. Volume 24, Number 3. May 1971. pp. 188-197.

Bentley, R. G.; Eggleston, K. O.; Price, D.; Frandsen, E. R.; and Dicrerman, A. R. 1977. The Effects of Surface Disturbance (Primarily Livestock Use) on the Salinity of Public Lands in the Upper Colorado River Basin. USDI, Bureau of Land Management. Denver Service Center, Lakewood, Colorado.

Blaisdell, James P. and Mueggler, Walter F. 1956. "Effect of 2,4-D on Forbs and Shrubs Associated With Big Sagebrush." Journal of Range Management. pp. 38-40.

Bowden, Norman. 1979. (Personal communication with Bert Lowry, Bureau of Land Management, Richfield District.) UDWR Regional Game Manager.

Box, Thaddis W.; Dwyer, Don D.; and Wagner, Frederic H. 1977. "The Public Rangelands and Their Management." A report to the President's Council on Environmental Quality. Utah State University, Logan, Utah. 59 p.

Braun-Blanquet. 1932. Plant Sociology; the Study of Plant Communities. McGraw-Hill. New York and London. 438 p.

Buckhouse, J. C. and Gifford, G. F. 1976. "Sediment Production and Infiltration Rates as Affected By Ground and Debris Burning on Chained and Seeded Pinyon-Juniper." Journal of Range Management. Volume 29, Number 1. pp. 83-85.

Bylund, H. Bruce and Geertsen, H. Reed. 1974. "Public Views on Land Use Planning in Utah," (Unpublished manuscript). January 1974. Utah State University, Logan, Utah. pp. 3-24.

Cook, C. Wayne. 1966. "Herbicide Mixtures Control Range Brush." Crops and Soils. Volume 18, Number 7. p 28.

______________. 1971. Effects of Season and Intensity of Use on Desert Vegetation. Bulletin 483. March 1971. Utah Agricultural Experimental Station, Utah State University, Logan, Utah. 57 p.

Cook, C. Wayne and Harris, Lorin E. 1968. Nutritive Value of Seasonal Ranges. Utah Agricultural Experimental Station Bulletin 472.

Cook, C. Wayne et al. 1958. Sagebrush Eradication and Broadcast Seeding. Utah Agricultural Experimental Station Bulletin. 23 p.

Crocker-Bedford, Dennis Coleman. 1976. "Food Interactions Between Utah Prairie Dogs and Cattle." M.S. Thesis. Utah State University, Logan, Utah.

REFERENCES CITED (continued)

Cronquist, Arthur; Holmgren, Arthur H.; Holmgren, Noel H.; and Reveal, James L. 1972. Intermountain Flora. Volume 1. Hafner Publishing Co., Inc., New York and London.

Dillion, Claude C. 1958. "Benefits of Rotation-Deferred Grazing on Northwest Ranges." Society of Range Management Journal. pp. 278-281.

Duff, Donald A. 1978. "Riparian Habitat Recovery on Big Creek, Rich County, Utah: A Summary of 8 Years of Study." Presented to Grazing and Riparian/Stream Ecosystem Forum, Denver, Colorado. November 3-4.

Duff, Donald and Robinson, Max. 1980. "Grazing of Riparian Vegetation by Sheep--General Impacts of Grazing," (personal communication). April 8, 1980.

Eckert, E. G. 1954. "A Study of Competition Between White Sage and Hologeton in Nevada." Journal of Range Management. Volume 7. pp. 223-225.

___________. 1975. Improvement of Mountain Meadows in Nevada. Research Report, USDI, Bureau of Land Management.

Environmental Protection Agency. 1978. Livestock Grazing Management and Water Quality Protection, Draft. Environmental Protection Agency, Seattle, Washington.

Fawcett, G. Allen et al. 1979. Six-County Development Plan. September 1979. Four Corner's Regional Commission.

Fisser, Mackey, and Nichols. 1974. "Contour-Furrowing and Seeding on Nuttall Saltbush Rangeland of Wyoming." Journal of Range Management. Volume 27, Number 6. pp. 459-462.

Frischknecht, Neil and Stevens, Richard. 1979. "Field Notes," (Personal communication with Max Robinson, Bureau of Land Management, Richfield District, by telephone and correspondence). November 1979.

Garrison, George A. 1953. "Effects of Clipping on Some Range Shrubs." Journal of Range Management. Volume 6, Number 5. pp. 309-317.

Gee, Kerry. 1980. "Ranch Budget Analysis--Mountain Valley Planning Area," (unpublished manuscript). Economics, Statistics, and Cooperative Service. Colorado State University, Ft. Collins, Colorado.

Gifford, G. E. 1972. "Infiltration Rate and Sediment Production Trends on a Plowed Big Sagebrush Site." Journal of Range Managment. Volume 25, Number 1. pp. 53-55.

Goebel, Carl. J. and Cook, C. Wayne. 1960. "Effect of Range Condition on Plant Vigor, Production, and Nutritive Value of Forage." Journal of Range Management. pp. 307-313.

Harmon, Craig B. 1979. "Mountain Valley Planning Area: Cultural Resources Technical Report," (Unpublished manuscript). November 11, 1979. USDI, Bureau of Land Management, Richfield, Utah.

Harper, J. L. 1969. "The Role of Predation in Vegetation Diversity." Diversity and Stability in Ecological Systems. Number 22. Brookhaven Symposium in Biology. pp. 48-62.

Hasenyager, Bob. 1980. "Prairie Dog Population Status," (personal communication). April 4, 1980. Utah Division of Wildlife Resources. Salt Lake City, Utah.

Hauck, F. R. 1977. Central Coal Project: Summary Report. Salt Lake City, Utah.

Hederick, Donald W. 1958. "Proper Utilization--A Problem in Evaluating the Physiological Response of Plants to Grazing Use: A Review." Journal of Range Management. Volume II, Number 1. January 1958. pp. 34-43.

Hickman, Terry J. 1978. "Systematic Study of the Native Trout of the Bonneville Basin." Colorado State University, Fort Collins, Colorado. 122 p.

Holmgren, Ralph C. 1976. "Vegetation Changes on 17 Nevada Range Sites Under Conditions of Grazing and No Grazing by Livestock for 38 Years--1937 to 1975," (Unpublished manuscript). Int. Forest and Range Experimental Station. USDA, Forest Service, and Nevada Agriculture Experimental Station. University of Nevada, Reno, Nevada. 51 p.

Hormay, August L. 1970. Principles of Rest-Rotation Grazing and Multiple-Use Land Management. September 1970. USDA, Forest Service, Washington, D.C. 25 p.

Jarvis, Joseph. 1974. "Sage Grouse Population Studies on the Parker Mountain in Southcentral Utah," (Unpublished manuscript). UDWR, Federal Aid Project. Salt Lake City, Utah.

Jense, Grant. 1980. "Biotic Potential of Big Game in Mountain Valley Planning Area," (personal communication). April 3, 1980. Utah State Office of Division of Wildlife Resources. Salt Lake City, Utah.

Jensen, Charles H.; Smith, Arthur D.; Scatter, George W. 1972. "Guidelines for Grazing Sheep on Rangelands Used by Big Game in Winter." Journal of Range Management. Volume 25, Number 5. September 1972. pp. 346-352.

Johnson, S. R.; Gary, H. L.; and Pouce, S. L. 1978. Range Cattle Impacts on Stream Water Quality in the Colorado Front Range. Research Note RM. 359. USDA, Rocky Mountain Forest and Range Experiment Station.

Johnson, W. M. 1965. "Effect of Grazing Intensity on Plant Composition, Vigor, and Growth of Pine Bunchgrass Ranges in Central Colorado." Ecology. Volume 37, Number 4. pp. 790-798.

REFERENCES CITED (continued)

Keng, E. B., and Merrill, Lee B. 1960. "Deferred Rotation Grazing Does Pay Dividends." Sheep and Goat Raiser. June 1960. pp. 12-13.

Kerr, Richard M. 1979. Mule Deer Habitat Guidelines. September 1979. Technical Note. USDI, Bureau of Land Management, Denver Colorado.

Klemmedson, James O. 1956. "Interrelations of Vegetation, Soils, and Range Conditions Induced by Grazing." Journal of Range Management. pp. 134-138.

Kneebone, William R. and Cremer, Carlos L. 1955. "The Relationship of Weed Size to Seedling Vigor in Some Native Grass Species. Agronomy Journal. Volume 47, Number 10. pp. 472-477.

Kufeld, Roland C. 1973. "Foods Eaten By the Rocky Mountain Elk." Journal of Range Management. Volume 26, Number 2. pp. 106-113.

Kufeld, Roland C.; Wallmo, O. C.; and Feddema, Charles. 1973. Foods of the Rocky Mountain Mule Deer. July 1973. Forest Service Research Paper. RM-111. USDA, Forest Service, Fort Collins, Colorado. 31 p.

Launchbaugh, J. L. 1969. "Range Condition Classification Based on Regressions of Herbage Yields on Summer Stocking Rates." Journal of Range Management. pp. 97-101.

Lusby, G. C. 1970. "Hydrologic and Biotic Effects of Grazing Versus Non-grazing Near Grand Junction, Colorado." Journal of Range Management. Volume 23. pp. 256-260.

Marwitt, John P. 1970. "Median Village and Fremont Culture Variation." Anthropological Papers, No. 95. University of Utah, Salt Lake City, Utah.

McCarty, E. C. and Price, Raymond. 1942. Growth and Carbohydrate Content of Important Mountain Forage Plants in Central Utah as Affected By Clipping and Grazing. USDA Technical Bulletin 818.

McIlvanie, Samual K. 1942. "Carbohydrate and Nitrogen Trends in Bluebunch Wheatgrass (Agropyron spicatum) With Special Preference to Grazing Influences." Plant Physiology. Volume 17. pp. 540-557.

Meehan, William R. and Platts, William S. 1978. "Livestock Grazing and the Aquatic Environment." Journal of Soil and Water Conservation. Volume 33, Number 6. November 12, 1978. Soil Conservation Society of America. pp. 274-277.

Morris, Melvin S. 1956. "Elk and Livestock Competition." Journal of Range Management. Volume 9, Number 1. January 1956. pp. 11-14.

Mueggler, W. F. 1975. "Rate and Pattern of Vigor Recovery in Idaho Fescue and Bluebunch Wheatgrass." Journal of Range Management. Volume 31, Number 3. May 1975.

Murie, O. J. 1951. The Elk of North America.

Nielsen and Hinkley. 1975. Economic and Environmental Impacts of Sagebrush Control on Utah's Rangelands--Review and Analysis. Utah Agricultural Experimental Station Research Report 25. 27 p.

Noble, Edward L. 1963. "Sediment Reduction Through Watershed Rehabilitation." Paper Federal Interial Agency Sedimentation Conference. January 28-31, 1963. USDA, Forest Service. Jackson, Mississippi. 29 p.

Otis, Maurice B. 1974. The Stream Conservation Handbook. Edited by J. Michael Migel. New York: Crown Publishers, Inc.

Pacific Southwest Interagency Committee (PSIAC). 1968. "Report on Factors Afecting Sediment Yield in the Pacific Southwest Area and Selection and Evaluation of Measures for Reduction of Erosion and Sediment Yield."

Parker, Kenneth W. 1954. "Application of Ecology in the Determination of Range Condition and Trend." Journal of Range Management. pp. 14-22.

Pechanec. 1954. "Sagebrush Burning Good and Bad." Farmers Bulletin. Volume 1948. p. 34.

Pechanec et al. 1965. Sagebrush Control on Rangelands. USDA Agricultural Handbook 227. 40 p.

Platts, W. S. and Rountree, C. 1972. Bear Valley Creek, Idaho Aquatic Environment and Fisheries Study. USDA, Forest Service.

Plummer, Perry A.; Christensen, Donald R.; Monsen, Stephen B. 1968. Restoring Big Game Range in Utah. Project No. W-82-R. Utah Division of Fish and Game, and USDA, Forest Service. Ephraim, Utah.

Poulson, H. A. and Ares, F. N. 1961. "Trends in Carrying Capacity and Vegetation on an Arid S.W. Range." Journal of Range Management. Volume 4. pp. 78-83.

Ralphs, Michael H. and Busby, Frank E. 1979. "Prescribed Burning: Vegetative Change Forage Production Costs and Returns on Six Demonstration Burns in Utah." Journal of Range Management. Volume 32, Number 4. pp. 267-290.

Robertson, J. H. 1971. "Changes on a Sagebrush-Grass Range in Nevada Ungrazed for 30 years." Journal of Range Management. Volume 24, Number 5. September 1971. pp. 397-400.

Robinson, Max E., 1979. "Field Notes and Records on Range and Watershed Rehabilitation Project," (Unpublished manuscript). From 1940 through 1976.

Ryan, Gwendolyn. 1975. Aquatic Habitat Inventory of Streams on National Resource Land. Wiscke, Western Interstate Commission for High Education. Boulder, Colorado.

Scotter, George W. 1980. "Management of Wildlife Ungulate Habitat in the Western United States and Canada: A Review." Journal of Range Management. Volume 33, Number 1. January 1980. pp. 16-27.

Short, L. R. and Woolfolk, E. J. 1956. "Plant Vigor as a Criterion of Range Condition." Journal of Range Management. Volume 9, Number 2. pp. 66-69.

Smith, Michael A.; Malechek, John C.; and Fulgam, Kenneth O. 1977. "Forage Selection by Mule Deer on Winter Range Grazed by Sheep in Spring." Journal of Range Management. Volume 32, Number 1. January 1979.

Stephenson and Street. 1977. As cited by Environmental Projection Agency. 1978. Livestock Grazing Management and Water Quality Projection, Draft. Environmental Protection Agency, Seattle, Washington, pp. III-24.

Stoddard, L. A.; Smith, A. D.; and Box, T. W. 1975. Range Management. Third Edition. McGraw-Hill Book Co.

Thomas, J. W.; Maser, C.; and Rodier, J. E. 1979. Riparian Zones in Managed Rangelands--Their Importance to Wildlife. USDA, Forest Service Technical Note. Pacific Northwest Forest and Range Experiment Station.

Tueller, Paul T. and Tower, Jerald D. 1979. "Vegetation Stagnation in Three-Phase Big Game Exclosures." Journal of Range Management. Volume 32, Number 4. July 1979. pp. 258-263.

U.S. Department of Agriculture. 1969. Climate Sevier River Basin Utah. May 1969. USDA, ERS-FS-SCS. 22 p.

__________. 1977. Herbage Response After Mechanical and Herbicide Treatment of Big Sagebrush in Southwest Idaho. July 1977. Agricultural Research Service, USDA in cooperation with USDI, Bureau of Land Management, and the Idaho Agriculture Experiment Station.

__________, Soil Conservation Service. 1976. National Range Handbook. July 13, 1976. pp. 21-27.

U.S. Department of Commerce, Bureau of Economic Analysis. 1978. Regional Economics Information System. Washington, D.C.

U.S. Department of the Interior, Bureau of Land Management. 1979. "Mountain Valley Planning Area--URA Step 3," (Unpublished manuscript). BLM Planning System, Richfield District Office, Richfield Utah.

__________. 1979b. Parker Mountain Grazing Management Environmental Impact Statement. Richfield District Office, Richfield, Utah.

Utah Division of Health. 1978. Wastewater Disposal Regulations. Utah Division of Health, Salt Lake City, Utah.

Utah Division of Wildlife Resources. 1978a. Utah Big Game Investigations and Management Recommendation, 1978. 78-3.

________. 1978b. Utah Upland Game Annual Report. 79-12.

Vallentine, John F. 1974. Range Development and Improvements. Brigham Young University Press: Provo, Utah. p. 516.

Vallentine, John F. 1978. U.S.-Canadian Range Management 1935-1977: A Selected Bibliography on Ranges, Pastures, Wildlife, Livestock, and Ranching. Oryx Press, Phoenix, Arizona. 337 p.

Weaver, J. E. and Darland, R. W. 1947. "Method of Measuring Vigor of Range Grasses." Ecology. Volume 28, Number 2. pp. 146-162.

Wein and West. 1971. "Phenology of Salt Desert Plants Near Countour Furrows." Journal of Range Management. Volume 24, Number 4. pp. 299-304.

Welsh, S. L. 1979. Illustrated Manual of Proposed Endangered and Threatened Plants of Utah. USDI, Fish and Wildlife Service, Bureau of Land Management, and USDA, Forest Service. 318 p.

Wilson, L.; Olsen, M.E.; Hutchings, T. B.; Southard, A. R.; and Erickson, A. J. 1975. Soils of Utah. Agriculture Experiment Station, Bulletin 492. Soil Conservation Service. Utah State University, Logan, Utah.

Yoakum, James D. 1978. Managing Rangelands for the American Pronghorn Antelope. USDI, Bureau of Land Management, Reno, Nevada. 14 p.

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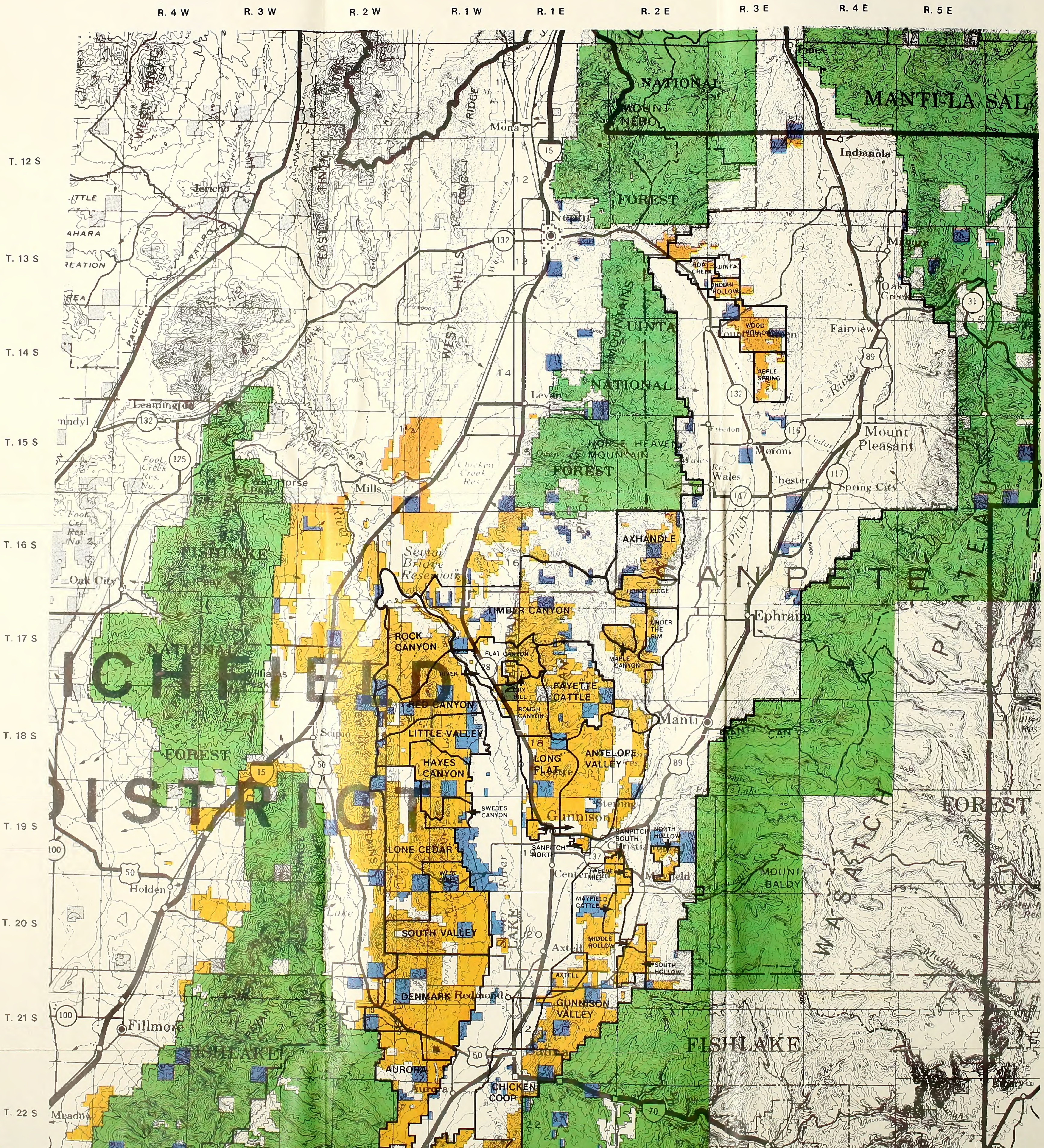
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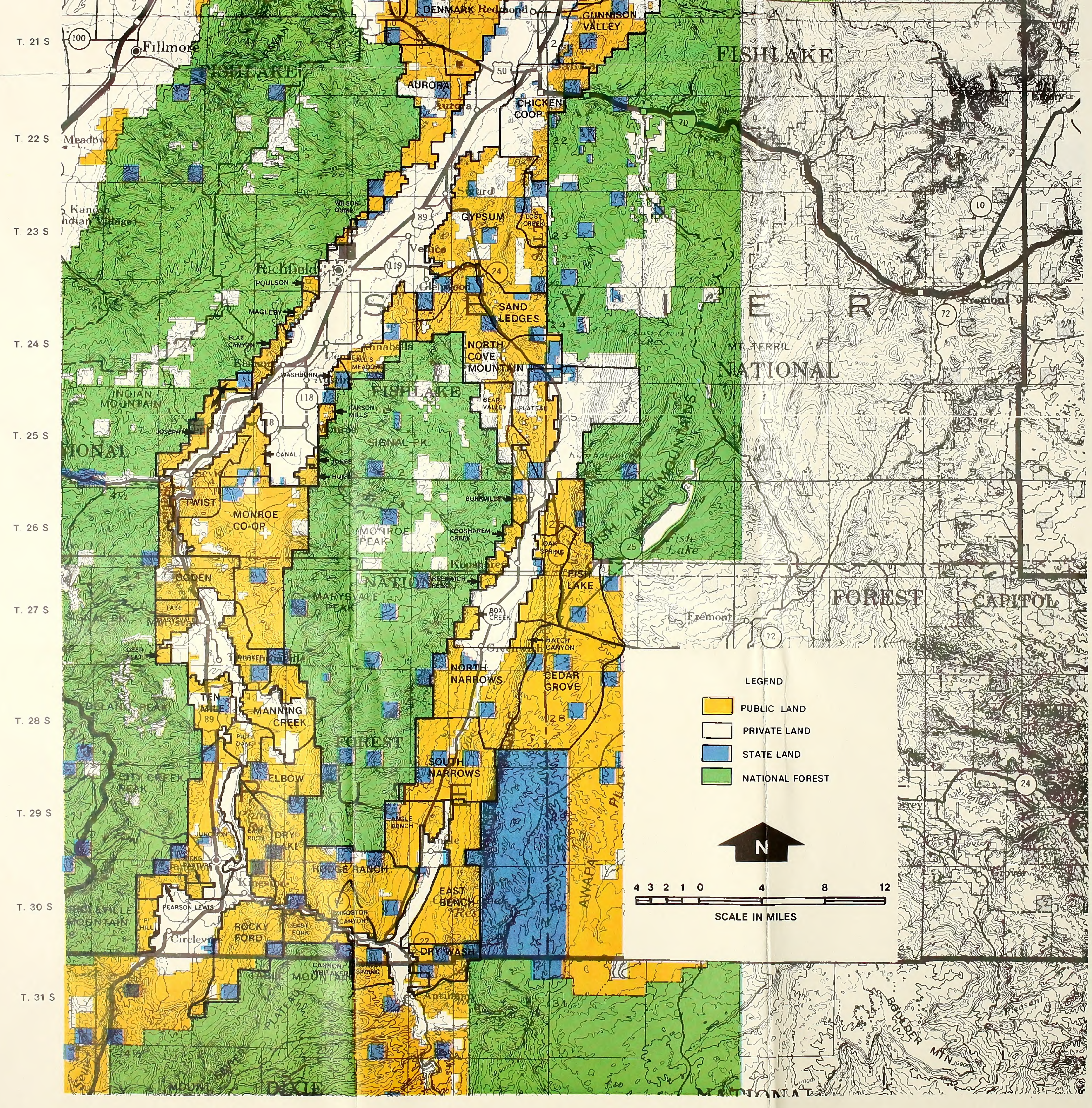

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